SONICBAR

Special Purpose

DOORS

SOUND INSULATING

BLAST RESISTANT

FUME TIGHT

FIRE RESISTANT

NUCLEAR SHIELDING

FIREBAR DOOR DIVISION
RYSDON PRODUCTS COMPANY

SONICBAR DOORS

ENGINEERED ISOLATION

BY RYSDON TECHNICIANS

The Rysdon organization is composed of engineers, designers, and metal craftsmen who have worked together for many years solving a wide range of door operating problems and designing and building special purpose doors, frames, sealing devices and hardware for manual or automatic operation.

Special purpose door problems range from institutional sound insulating to industrial gas-tight requirements, blast resistance, and nuclear shielding—from small access openings to mammoth multi-ton giants.

The wide range of special purpose door requirements which have been met by the Rysdon organization in over 30 years attests to their ability to provide partial or complete designs and completely satisfactory installations for almost any new door function which may be encountered by the designing architect or engineer.

Many special purpose door closures have become standardized so that typical details may be given. Scale tracing sheets of many of these are available upon request.

Due to the frequent need for quick delivery of doors and frames, and in order to offer economies to the industry through use of standardized types and sizes of "packaged" openings, we offer standard units ready for immediate shipment.

Our experimental department includes a new sound transmission testing facility for development of new and improved products. This is at your service for special door problems. These facilities currently are being used especially for higher-than-usual sound transmission loss constructions.

Firebar special purpose doors provide a standard second to none in careful design engineering, conscientious metal craftsmanship and "know-how" derived from solving varied door problems.

SEND FOR OUR CATALOG OF ADHACO SPECIAL PURPOSE HARDWARE AND SEALING DEVICES

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Rysdon Products Co. Panic Opening Sound Insulating Doors reduce noise from engines in tests cell at Chanute Air Force Base, Rantoul, Ill.

PARTIAL LIST OF SONICBAR SPECIAL PURPOSE DOOR INSTALLATIONS

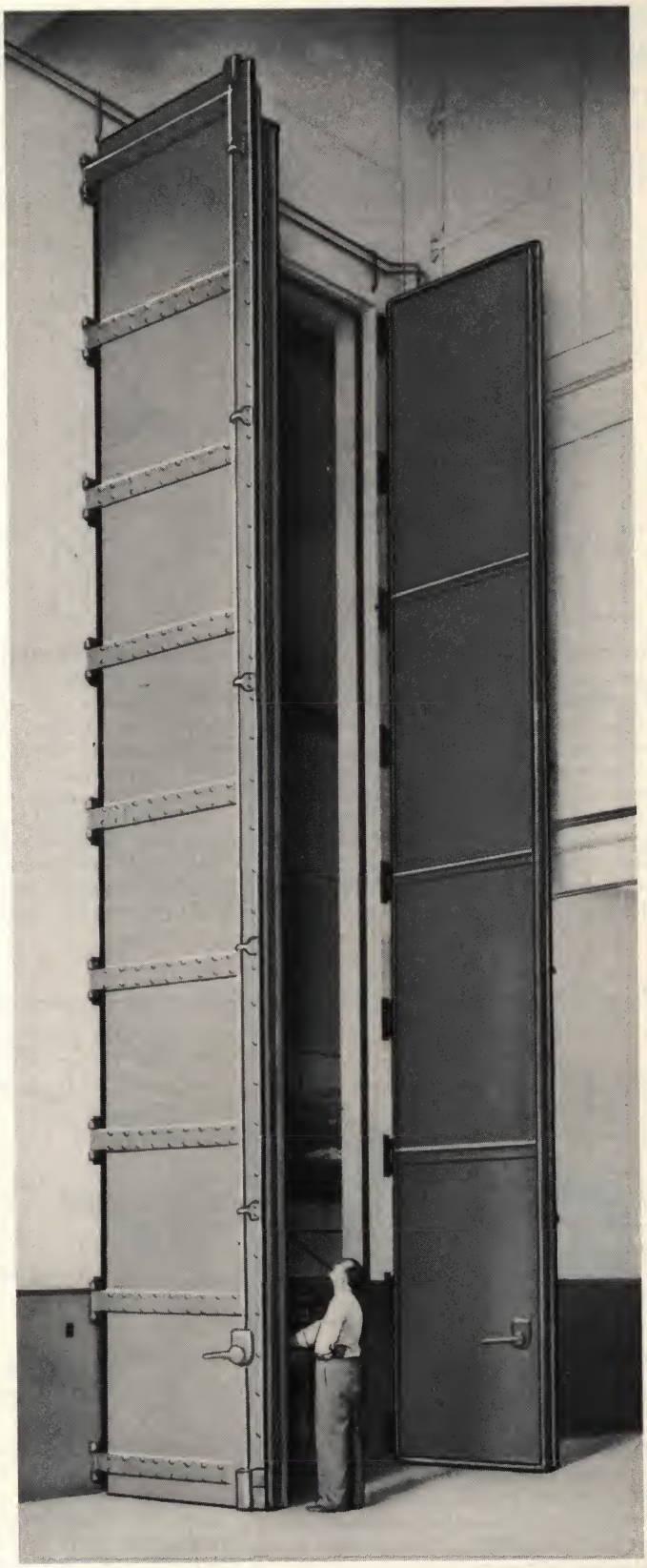
Allis-Chalmers Manufacturing Company
Armour Research Foundation of Illinois Institute of Technology
AVCO-Bridgeport Lycoming Division
A. V. Roe Canada Ltd.
Braniff International Airways Maintenance Base
Bendix Aviation Corp.
Boeing Developmental Center
Canadair Ltd.
Caterpillar Tractor Company
Chrysler Corporation
Convair Div., General Dynamics Corp., San Diego, California
Curtiss-Wright Corporation
E. I. duPont de Nemours & Company
Ford Motor Company
General Electric Company, Missile and Ordnance Dept.
General Motors Corp.—A. C. Spark Plug Division, Technical Center, Chevrolet Motor Division
International Harvester Company
Jones & Laughlin Steel Co.
Massachusetts Institute of Technology
McDonnell Aircraft Corp.
National Broadcasting Company
National Film Board, Montreal, Canada
Nash-Kelvinator Corporation
Oak Ridge National Laboratory
Rolls Royce Canada Ltd.
Standard Oil Company of New Jersey
Trans Canada Airlines
United Aircraft Corporation—Hamilton Std. Propeller Div., Pratt & Whitney Div.
U. S. Air Force—Chanute AFB, Edwards AFB, Hill AFB, Langley AFB, Mather AFB, McClellan AFB, Patrick AFB, Wright-Patterson AFB
U. S. Dept. of the Army
Corps of Engineers, Cape Canaveral, Fla.
Corps of Engineers, Redstone Arsenal, Huntsville, Ala.
Climatic Research, Mt. Washington, N. H.
Army Launching Facility, White Sands Proving Ground, N.M.
U. S. Navy Department—El Toro Marine Base, Engineering Experimental Station, Johns Hopkins Research Laboratory, North Island Naval Air Base, Philadelphia Navy Yard, Puerto Rico Naval Base, Portsmouth Navy Yard
Westinghouse Electric Corporation, Aviation Gas Turbine Div.
Whirlpool Seeger Corp., Evansville, Ind.
WTOP-TV Studio, Washington, D. C.
WBKB-TV Studio, Chicago, Ill.

YOUR DOOR PROBLEM INQUIRIES

We offer the full cooperation of our engineering department to architects, engineers and builders faced with problems of nuisance isolation such as—noise control, blast resistance, radiation shielding, gas tight conditions, etc.

Since many door problems need special analysis, in order to offer recommendations we suggest that your inquiries include the following information:

1. Type of builders hardware desired for institutional doors.
2. Type of physical condition to be controlled.
3. Information about objectionable condition—e.g., 1000 psi blast pressure—140 db sound level and 50 db reduction required—2″ (water manometer) fume-tight condition, etc.
4. Thickness and type of wall construction.
5. Special threshold conditions or requirements.
6. Special material handling problems such as heavy wheeling or monorail through openings.
7. Excessive operational pressures or vacuum, and direction in relation to door swing or slide. Temperature conditions if unusual.
8. Explosion or emergency panic bar release requirements.
9. Power operation requirements—source of power supply.
10. Other special operational requirements.



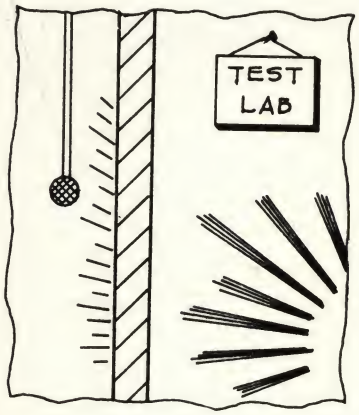
The expert knowledge of Firebar engineers has solved many difficult sound insulating door problems. To meet the needs of one aircraft manufacturer Firebar designed and built these Sonicbar doors for an opening 10 x 33 feet. Doors weigh 10,000 pounds, yet are manually operated with ease.

SPECIAL SERVICES

The following brief description of special services provided by our company reflects the "plus features" which supplement our products, assuring customer service and quality product performance. Your specification incorporating Sonicbar Special Purpose Doors automatically includes these special services.

Portfolio of Specifications and Scale Drawings

This portfolio enables the specification writer to select the type of industrial or institutional door unit specification which fits the sound insulating requirements of the project being designed.
Also included in this portfolio are 3″ scale drawings detailing the various door, frame, hardware and clearance seal constructions. The heavy line drawings are suitable for easy tracing.



Laboratory Testing Facilities

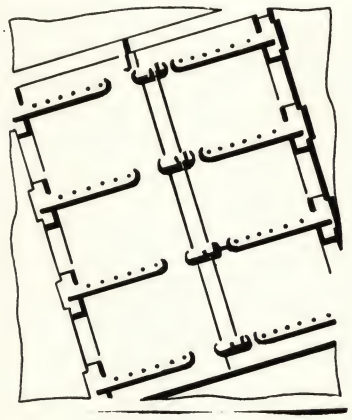
A continuing program of testing various combinations of materials for sound attenuation, clearance crack sealing, etc. results in constantly better and more economical products.
Furthermore, each new product and device is subjected to thorough operating tests before they are installed on a job. This laboratory testing program is your assurance that Sonicbar doors will perform "on the job" as specified.

Sound Reference Handbook

This book contains valuable reference data, graphs, and drawings relating to the fundamentals of sound control in the construction of buildings and the proper design of sound insulating door openings. Much of this material reflects the latest developments in sound control and is not available in other handbooks.
If you have not received your copy, it is available at no cost to architectural and engineering firms requesting it on properly executed Company stationery.

Sound Certification Labels

Every Sonicbar sound insulating door bears a label, serially numbered and showing the decibel rating of the door. This label is your assurance that a prototype door of the same design has been tested at a nationally recognized acoustical laboratory and that the door has a sound transmission loss equal to that imprinted on the label.



Standard Sound Insulating Units

Important economies in cost and delivery are effected by production run, standardized arrangements of doors, frames, hardware and seals in standard sizes. We offer these advantages to the construction industry by inventorying institutional and industrial units.
Standardized printed approval drawings of these standard units are available for clarification of job requirements such as hand of doors, hardware alternates, etc.

Installation Procedures and Instructions

The sound attenuation or other special requirements for which a door opening is designed is dependent on proper installation of all door opening components.
To facilitate and assure proper installation, complete instructions and installation procedures for setting and bracing frames, hanging doors and hardware, installing clearance crack closure seals and final adjustment suggestions are furnished with each order.

DOOR REQUIREMENT SELECTOR

The table below lists building constructions, types and thicknesses of walls, and approximate sound reduction of these walls. From this information the door sound reduction best matched to the installation can be selected. Note that for heavier walls and higher sound reductions, two doors in Sound Lok arrangement are indicated.

Type Bldg. Construction	[1]Masonry Walls			[2]Doors		
	No.	Thickness (each)	Sound Reduction Db	No.	Type	[3]Db
Residential and Institutional	1	4"-6"	40-45	1	SQ2-45	45
					DQ2-45	45
					DM2-48	48
Institutional	1	8"	45-50	1	SM2-48	48
					DQ2-45	45
					DM2-48	48
					DH3-45	45
					DQ3-47	47
					DM3-53	53
	1	12"	50-55	1	DM2-48	48
					DH3-45	45
					DQ3-47	47
					DM3-53	53
					SM6-55	55
Industrial	1	8"	45-50	1	DQ2-45	45
					DM2-48	48
					DH3-45	45
					DQ3-47	47
					DM3-53	53
	1	12"	50-55	1	DH3-45	45
					DQ3-47	47
					DM3-53	53
	1	12"-24"	55-65	1	DM3-53	53
					DA6-60	60
	2	8"	60-70	2	DQ2-45	60
					DM2-48	65
					DH3-45	60
					DQ3-47	65
					DM3-53	70
	2	12"	70-80	2	DM2-48	68
					DH3-45	65
					DQ3-47	70
					DM3-53	75
					DA6-60	80
	2	12"-24"	80-85		DM3-53	82
					DA6-60	85
	2	12"-24"	Over 85	Special construction. Consult our engineering staff.		

1. Wall thickness given only as a guide. Thickness and cavity dimension in double walls must be chosen with care.

2. Sliding door units may be substituted for swing type.

3. Decibel numbers in this column for cavity wall installations are based on a separation between doors for standard installation in walls of thickness indicated.

DOOR TYPE SELECTOR

Rysdon engineers have designed the following types of doors to meet the varied requirements of sound reduction, function, appearance, and cost. See information on auxiliary materials on page 7.

1. Institutional Quiedor 1¾" Flush Door, 45 Db, Type DQ2-45

Hardware: Standard builders' hardware, recessed aluminum "Auto-Seal" threshold crack closer.

Frame: Standard 5½" hollow metal 16 ga. min., other thicknesses available. Welded adjustable Architectural Type H-240 stops or Type H-252 Econostop, depending on requirements and degree of economy.

The Sonicbar Quiedor offers sufficient sound reduction for most locations in institutional buildings. It combines quality and economy with a distinctive appearance which is enhanced by the Neoprene insert perimeter banding on the stop side.

2. Institutional Alstele 1¾" Flush Door, 48 Db, Type DM2-48

Hardware: Standard builders' hardware, heavy duty 4½"x4½" butt hinges, "Auto-Seal" aluminum combination kick plate and threshold crack closer.

Frame: Standard 5½" hollow metal 14 ga. min., other thickness frames available. Welded adjustable Architectural type H-240 stops.

The Sonicbar Alstele unit has the highest sound reduction available in a door of this thickness. It is fabricated with highest quality materials and workmanship which gives it the appearance of the finest custom built hollow metal door and frame.

3. Institutional 1¾" Sliding Flush Unit, 45 Db, Type SQ2-45

Hardware: Standard sliding door lockset.

Frame: Standard 16 ga., also 16 ga. wall pocket members. Standard type rollers and track. Specially designed Acoustilok perimeter sealing system and "Auto-Seal" recessed aluminum threshold crack closer.

This unit provides the quality workmanship and excellent appearance of the Quiedor sound insulating door construction. Sufficient sound reduction for most installations is provided.

4. Institutional 1¾" Sliding Flush Unit, 48 Db, Type SM2-48

Hardware and Frame: See Item 3.

This unit, incorporating our Alstele door construction, provides the highest sound reduction obtainable at present for 1¾" thickness. Highest quality materials and workmanship are used in the manufacture of this unit.

5. Industrial Quiedor 3" Flush Door, 47 Db, Type DQ3-47

Hardware: Adhaco heavy duty, fully adjustable, including multi-point "Slam" type locking devices, "Six-Way" hinges, and "Auto-Seal" threshold crack closer.

Frame: Struct. chan., 6"-12 lb. WF, 8"-11.5 lb., or 12"-20.7 lb. with 6"-8.2 lb. chan. sill. Fully adjustable Type H-210 industrial Neoprene gasketed stops with 12" o.c. position locking devices.

6. Industrial Metal Covered 3" Door, 45 Db, Type DH3-45

Hardware and Frames: Same as in Item 5.
This door is recommended where indicated sound loss is sufficient, and somewhat longer than usual delivery time is acceptable.

7. Industrial Alstele 3" Flush Door, 53 Db, Type DM3-53

Hardware and Frames: Same as in Item 5.
One of our latest and best designs, this door embodies highest quality materials and workmanship, and provides highest sound reduction. It can be fabricated to sizes other than standard and to meet any unusual requirements of function.

8. Institutional Wal-Dor 6" Sliding Unit, 55 Db, Type SM6-55

Our most recent development, the Wal-Dor Unit, should be specified when a sliding door is required with the sound reduction of a concrete wall and the appearance, workmanship, and quality of the finest custom built sliding partition.

9. Industrial Acoustidor 6" Door, 60 Db, Type DA6-60

This newest industrial unit is intended for those installations where highest sound reduction is required with a very rugged door. Unit is complete with heavy duty Adhaco locking devices, "Six-Way" hinges, multiple perimeter sealing devices and dual "Auto-Seal" threshold crack closers.

STANDARD DOOR ARRANGEMENTS AND FRAMES

STANDARD DOOR ARRANGEMENTS

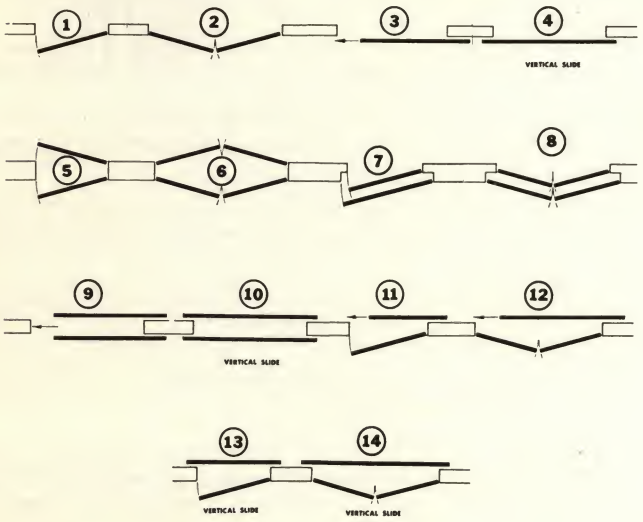
Selection of the proper arrangement of doors in an opening becomes increasingly important as isolation door problems constantly become more varied and complex.

When several swinging or sliding doors are hung in the same opening, the design and function of hardware and sealing devices become of prime importance.

The following diagrams with our standard reference numbers indicate the most frequently used door arrangements in which special purpose doors are used.

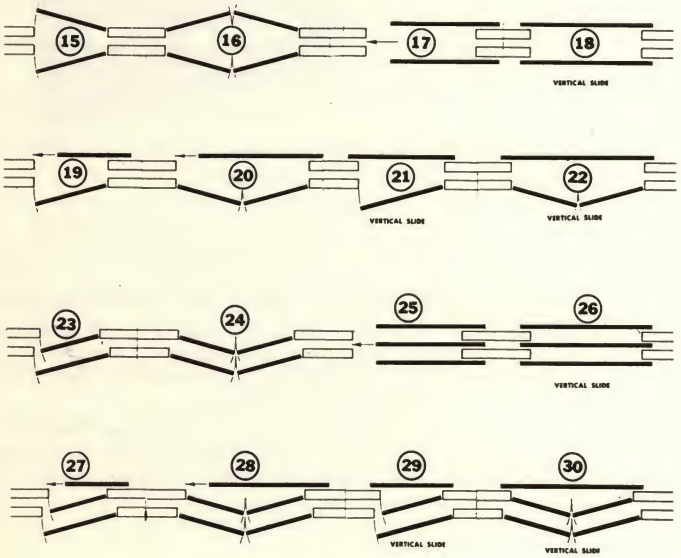
SINGLE WALL INSTALLATIONS

Most facilities require only a single wall of varying thickness and construction. Adequate sound reduction at openings can be obtained with either single door and frame units or double Sound Lok arrangements as shown below:



DOUBLE WALL SOUND LOK INSTALLATIONS

Double walls of the cavity type are required for very high sound reduction. The more commonly used combinations of Sound Lok arrangements are shown below:



STANDARD DOOR FRAMES

The types of frames shown below are those most commonly used with special purpose doors.

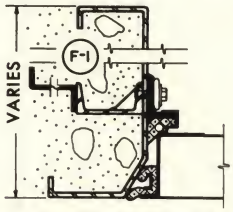
Types F-2, F-3, F-4 and F-5 accommodate most masonry wall conditions and provide heavy duty adjustable sponge Neoprene clearance crack seals equipped with position locking devices.

For large openings or where exceptional crack sealing is desired, we recommend the use of Type F-1 formed frames which provide for the use of two additional seals at head and jambs.

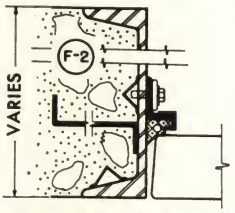
Type F-6 frame incorporates the housing for pneumatic operated "Auto-Air" seals, which have proven highly efficient when used with vertical and horizontal sliding doors. Additional details are shown on page 15.

Further information on types F-7 and F-8 will be found on pages 9, 10 and 11.

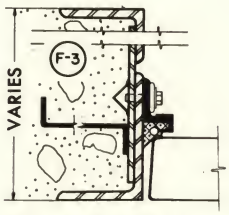
Rysdon engineers are constantly testing new types of frames and clearance crack sealing devices. Your inquiries are invited regarding various adaptations of the standard frames and seals illustrated or regarding your special problems.



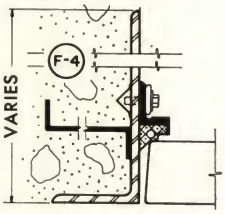
Formed Steel for Triple Seals
Std. 12 ga. Avail. to $\frac{3}{8}$" plate
Min. thick. 6", max. 18"



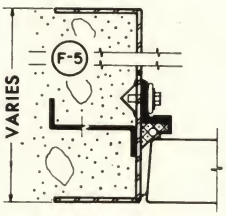
Structural Steel Channel
Std. 6"-12 lb., 8"-11.5 lb., 12"-20.7 lb.
Min. thick. 6", max. 15"



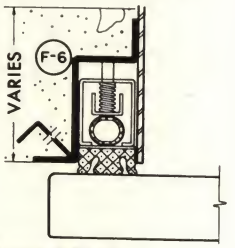
Structural Angles & Plate
Std. $\frac{1}{4}$" Plate & Var. angles
Min. thick. 9", max. 30"



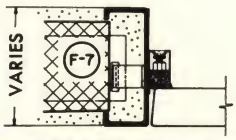
Structural Angle
Std. $3\frac{1}{2}$" x 6" x $\frac{5}{16}$"
Min. thick. 6", max. 8"



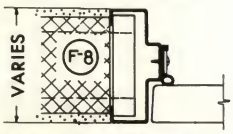
Formed Steel Channel
Std. 12 ga. Avail. to $\frac{1}{2}$" Plate
Min. thick. 8", max. 24"



Formed Steel "Auto-Air" Housing
Std. 12 ga. Avail. to $\frac{3}{8}$" Plate
Min. thick. 8", max. 24"



Formed Steel Architectural Frame and Stop
Std. 14 ga., Avail. in 16 & 12 ga.
Std. $5\frac{1}{2}$" thick
Min. thick. $4\frac{1}{4}$", max. 12"



Formed Steel Frame With Econostop Seal
Frame 16 ga., Std. $5\frac{1}{2}$" thick
Min. thick. $4\frac{1}{4}$", Max. 12"

STANDARD UNITS, SOUND INSULATING DOORS

To meet the wide range of variations required of most sound insulating doors, frames and hardware, all of our products until recently were custom designed and built for each opening. There has been, however, an increasing need for door openings which can be obtained quickly in popular sizes with standard hardware functions.

Standard Sizes—We now supply most of our different sound insulating openings in standard sizes with shipment of complete units including frames, doors, hardware and seals approximately ten days after receipt of order, and at considerable economy over other sizes. These standard sizes and types fill the widest range of industrial sound insulating requirements and have proved to be the most popular. We recommend that details and specifications of standard units be specified whenever feasible.

Scale tracing sheets of standard sizes and details are available upon request.

Custom Built Units—We also provide a wide range of sizes other than standard. Although these are not immediately available from stock, standard approval drawings can be supplied immediately, frames are shipped 7-10 days after approval of drawings, and doors soon thereafter.

SINGLE WALL INSTALLATIONS

1. Institutional 1¾″ Quiedor Flush Units, 45 Db, Type DQ2F-45

Standard Sizes:

Singles:	2′6″ x 6′8″	3′0″ x 6′8″	2′6″ x 7′0″	3′0″ x 7′0″
	2′8″ x 6′8″	3′4″ x 6′8″	2′8″ x 7′0″	3′4″ x 7′0″
Pairs:	5′0″ x 6′8″	6′0″ x 6′8″	5′0″ x 7′0″	6′0″ x 7′0″
	5′4″ x 6′8″	6′8″ x 6′8″	5′4″ x 7′0″	6′8″ x 7′0″

Similar doors with half glass, Type DQ2H-45 and 10″ x 10″ vision panels, Type DQ2V-45 also available in standard sizes.

2. Institutional 1¾″ Alstele Flush Units, 48 Db, Type DM2F-48

Standard sizes as in Item 1. Doors with half glass and 10″ x 10″ vision panels also standard.

3. Institutional 1¾″ Sliding Flush Units, 40 Db, Type SQ2-40

Standard Sizes:

Singles:	2′8″ x 6′8″	2′8″ x 7′0″
	3′0″ x 6′8″	3′0″ x 7′0″

4. Industrial 3″ Quiedor Flush Units, 47 Db, Type DQ3-47

Standard Sizes:

Singles:	2′8″ x 6′8″	2′8″ x 7′0″	3′6″ x 7′0″	4′0″ x 8′0″
	3′0″ x 6′8″	3′0″ x 7′0″	4′0″ x 7′0″	5′0″ x 10′0″
Pairs:	5′4″ x 6′8″	5′4″ x 7′0″	7′0″ x 7′0″	8′0″ x 8′0″
	6′0″ x 6′8″	6′0″ x 7′0″	8′0″ x 7′0″	10′0″ x 10′0″

Vision panels 10″ x 10″ standard.

5. Industrial 3″ Alstele Flush Units, 53 Db, Type DM3-53

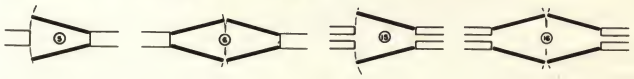
Standard sizes with or without vision panels as in Item 4.

6. Industrial 3″ Metal Covered Units, 45 Db, Type DH3-45

Standard sizes with or without vision panels as in Item 4.

SOUND LOK INSTALLATIONS IN SINGLE AND DOUBLE (CAVITY) WALLS

Opposite Swing Openings



7. Institutional 1¾″ Quiedor Flush Units, Type DQ2F-45, (Installation: 50-70 Db Sound Reduction).

Standard sizes as in Item 1, also half glass, vision panels.

8. Institutional 1¾″ Alstele Flush Units, Type DM2F-45, (Installation: 55-75 Db Sound Reduction).

Standard sizes as in Item 1, also half glass, vision panels.

9. Industrial 3″ Quiedor Flush Units, Type DQ3-47, (Installation: 55-75 Db Sound Reduction).

Standard sizes as in Item 4, also 10″ x 10″ vision panels.

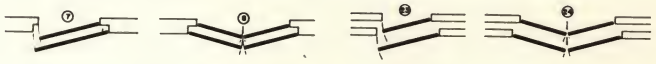
10. Industrial 3″ Alstele Flush Units, Type DM3-53, (Installation: 65-85 Db Sound Reduction).

Standard sizes as in Item 4, also 10″ x 10″ vision panels.

11. Industrial 3″ Metal Covered Units, Type DH3-45, (Installation: 50-70 Db Sound Reduction).

Standard sizes as in Item 4, also 10″ x 10″ vision panels.

Tandem (Panic) Swing Openings



12. Institutional 1¾″ Openings as in Items 7 and 8.

Available in custom built sizes.

13. Industrial 3″ Openings as in Items 9, 10, and 11.

Table below lists frame opening sizes for smaller of two tandem doors.

Standard Sizes:

Singles:	3′0″ x 6′8″	3′6″ x 7′0″
Pairs:	6′0″ x 6′8″	7′0″ x 7′0″

INSTITUTIONAL SOUND INSULATING DOOR UNITS

GENERAL DESCRIPTION

Sonicbar Institutional Door Units are furnished in two standard types to meet the varying conditions of sound attenuation, economy, and project requirements. They consist of 1¾" thick doors constructed with 16 gauge cold rolled stretcher levelled sheet steel flush face panels, 14 or 16 ga. formed metal frames, and adjustable clearance crack seals.

Doors and frames are completely mortised, reinforced and fitted at the factory for accommodating all types of standard builders' hardware. All materials are precision fabricated to the highest standards of metal craftsmanship.

For best results in sound control, we recommend that doors, frames, and sealing devices be supplied as complete units to assure proper operation and prevent divided responsibility for efficiency in the completed job.

Units are supplied in standard sizes and with half glass or vision panels as indicated on page 7. We also supply other sizes, special hardware provisions, and custom designs.

All doors have been tested at Riverbank Acoustical Laboratories, Geneva, Ill., and rating for each is based on these tests.

Standard printed 3" scale drawings for tracing and complete detailed specifications are available.

Quiedor Flush Door, 45 DB, Type DQ2F-45

The Quiedor is the newest addition to the Sonicbar family of sound insulating doors. It is designed to supply the need for an excellent appearing but economical flush panel 1¾" door with a 45 db rating. The Quiedor mortised band of heavy duty moulded Neoprene on stop side gives this door a distinctive appearance and assures complete acoustical sealing when door is closed.

Bottom of door is recessed for aluminum housing "Auto-Seal" threshold crack closer providing sponge Neoprene compression sealing at threshold when door is closed and instantaneous spring-actuated retraction when opened.

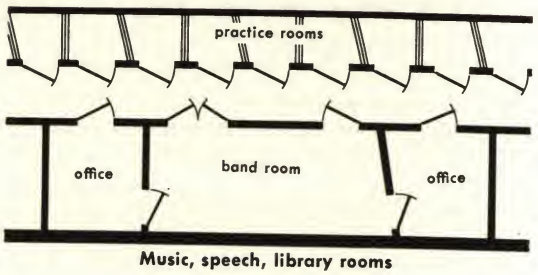
The Quiedor is completely mortised, reinforced and fitted for application of all standard builders' template hardware.

Alstele Flush Door, 48 DB, Type DM2F-48

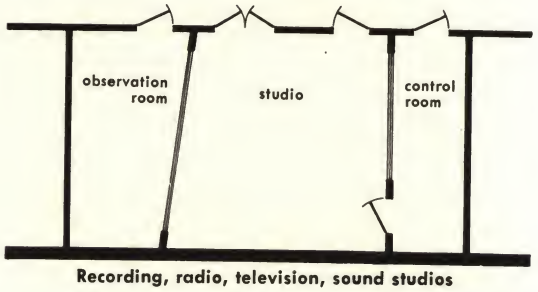
The Alstele door is recommended when highest sound reduction, finest appearance, and highest quality materials and workmanship are required. The door is completely sound deadened and free from metallic sounds. The unit provides a high degree of sound attenuation adequate for practically all institutional requirements and has met with overwhelming approval for installations of the type shown at the right.

Doors are constructed similar to type DQ2F-45 except that additional sound barrier materials are incorporated in the panel construction. Frames are 14 ga. formed steel minimum, and heavy duty 4½" x 4½" butt hinges are used.

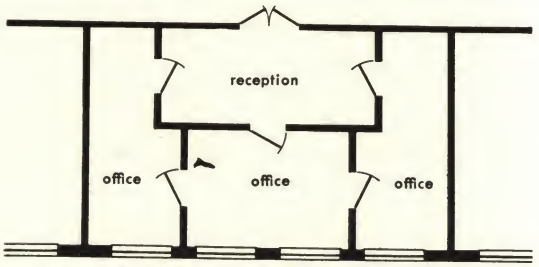
Sonicbar Door reduces objectionable sound.



Music, speech, library rooms



Recording, radio, television, sound studios



Professional and private offices

USES

Modern buildings have many locations where noise of business machines, personnel traffic, elevators, conversations, merchandise handling, record filing, etc., must be isolated so that it does not escape to places where people are working, sleeping, or otherwise need quiet.

Sonicbar institutional sound insulating doors are ideally suited for isolating sound in hospitals, hotels, schools, churches, theatres, office buildings and similar places where a door of relatively high sound attenuation is necessary.

Specific locations where it is desirable to control or isolate sound occur in the following:

- Auditoriums, recital and lecture halls
- Factory areas, furnace and equipment rooms
- Executive and legal offices
- Medical and dental suites
- Radio and television studios
- Business machine rooms
- Recording and music studios
- Sports and entertainment centers
- Clubs and lounges

SPECIAL REQUIREMENTS

Where extremely high sound attenuation is required such as radio and television studios, these institutional doors may be installed in a Sound Lok arrangement, See page 18.

Also a Sonicbar institutional unit including door, frame and seals provides an ideal barrier against dust, vapor, smoke, fumes and weather. Our engineers will be glad to assist with special requirements.

INSTITUTIONAL DOOR FRAMES

GENERAL

This institutional sound insulating door frame fills the need in schools, hospitals, churches, hotels, offices and similar buildings for a tight seal between door and frame.

A built-in sponge Neoprene gasket acts as a cushioned door stop having positive adjustment which seals the clearance crack and prevents impact noise. It eliminates the disadvantages of the immovable non-conforming stop of the standard frame and effectively seals the door clearance crack.

This radically new stop is finding wide use also as a seal against dirt, dust due to air conditioning, weather and odors in various installations where these nuisances are objectionable.

ADJUSTABLE STOP FEATURES

A simple, fool-proof adjustment of the stop compensates for wood door warpage, inaccuracies of installation, or wear on the gasket face of the stop itself. Positive positioning of this stop is achieved by means of a Phillips head screw driver at individual adjusting points which are provided in the edge of stop 12″ O.C. Adjustments of the gasketed stop up to 3/8″ may be made.

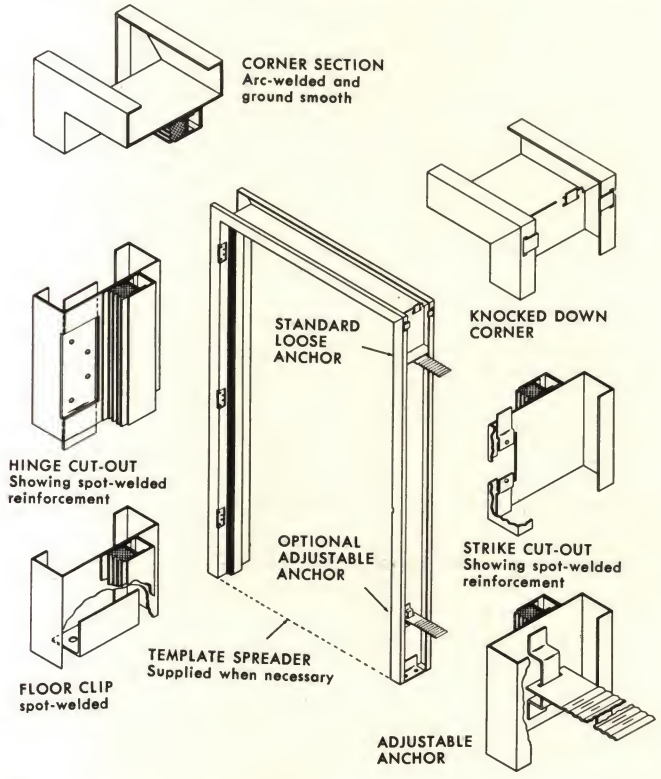
To insure against damage during building construction the entire adjusting unit of the stop may be easily removed, or as easily installed if shipped separately. This eliminates the chance of paint being deposited on the Neoprene gasket face.

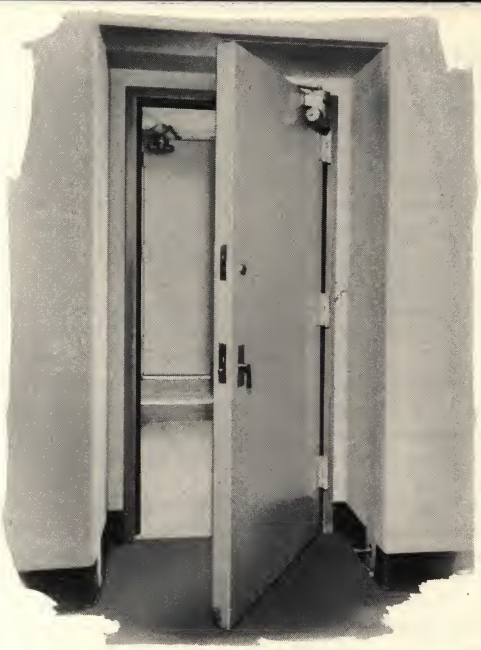
FRAME CONSTRUCTION

Construction features of this frame with integral adjustable stops are shown below. Note that all modern metal door frame features such as factory mortising and reinforcing for hardware, masonry cover plates, and mitered corners are incorporated in frame construction.

Standard frames are supplied in 16 gauge for Quiedor and 14 gauge for Alstele doors, both in the 5½″ thickness. Heavier gauge frames are built to specifications. Normally furnished as completely assembled units, these frames can be supplied knocked down.

Institutional frames are finished with neutral color rust inhibitive primer. If desired, frames may be given baked enamel finish to match color samples.





Door installed in Sonicbar Institutional Frame. Sponge Neoprene stops and threshold crack closer keeps out sound, dust, odors.

ARCHITECTURAL ADJUSTABLE DOOR STOPS

When desired, Sonicbar architectural adjustable door stops may be furnished as separate units for application to wood or metal door jambs. Metal frames must be furnished as cased openings since it is not practical to apply these stops on top of integrally formed stops.

The installation of Sonicbar architectural adjustable stops to door frames together with the application of a satisfactory type of threshold closer on doors will render the door opening sound, dust, odor, moisture and weather proof.

SHORT FORM DOOR STOP SPECIFICATIONS

Where shown on plans, all frames (structural, hollow metal or wood) shall be furnished complete with Sonicbar architectural adjustable door stops as manufactured by Firebar Door Division, Rysdon Products Company, Chicago 20, Ill. Neoprene gasketed stops shall be adjustable with internally located screws having positive self locking, forward and backward minimum 3/8″ adjustment. Stops to be fitted in the field and attached to frames by means of wood screws or self-tapping metal screws.

SHORT FORM DOOR FRAME SPECIFICATIONS

Where shown on plans, all metal door frames shall be institutional type as manufactured by Firebar Door Division, Rysdon Products Company, Chicago 20, Ill. Frames shall be formed (16)(14)ga. steel and shall have integral adjustable stops with sponge Neoprene gaskets. Stops shall be adjustable not less than 3/8″ by internally located adjusting screws which shall be self locking and positive in action, both forward and back. Gaskets and adjusting unit shall be removable.

Frames shall be factory template fitted, drilled and tapped for all mortised hinges and strikes. Corners of frames shall be mitered to hairline joints, welded and ground smooth.

Masonry cover boxes to be welded to back side of frame to protect all tapped holes. Frames to receive one shop coat of rust inhibitive primer. All materials furnished under this specification to be guaranteed against defects in material and workmanship for a period of one year.

INSTITUTIONAL QUIEDOR SOUND INSULATING UNITS

STANDARD UNITS TYPE DQ2-45

Quiedor standard units consist of the following:

A. Door 1¾" thick, Type DQ2-45.

B. Aluminum recessed "Auto-Seal" threshold crack closer.

C. Formed 16 gauge frame 5½" thick.

D. Adjustable Neoprene stops, Architectural Type H-240 or Econostop Type H-252.

E. Doors and frames mortised, reinforced and fitted for the following builders' hardware:
   (a) 1½ pairs 4½" x 4½" template butt hinges.
   (b) Mortise lockset Series 161 with 2¾" backset.
   (c) Overhead check reinforcements in doors and frame.

The above standard units when furnished in the standard sizes shown on opposite page for Alstele units offer production economies and quick deliveries. Quiedor units can also be furnished custom built to almost any required opening size or fitted with special hardware.

Standard printed 3" scale drawings suitable for tracing and complete detailed specifications covering the institutional Quiedor units are available upon request.

SHORT FORM "SPECS" FOR DQ2-45 UNITS

General—*All door openings shown on plans as "Sound-Proof" shall be Sonicbar institutional units, Type DQ2-45 as furnished by Firebar Door Division, Rysdon Products Co., Chicago 20, Ill., or approved equal. Units shall include laboratory certified sound insulating 45 db doors, 16 gauge formed metal frames and adjustable type clearance crack sealing devices.*

Door and Frame Construction—*Doors shall be 1¾" thick, flush design, face panels formed of 16 gauge cold rolled stretcher leveled sheet steel. Stop side of door shall have heavy duty Neoprene banding at head and end stiles. Panels shall be reinforced and acoustically damped to produce required sound transmission loss. Frames shall be formed of 16 gauge steel with hairline mitered head and jamb welded joints and provided with masonry cover boxes at mortises. Doors and frames shall be factory mortised, reinforced and fitted for template builders hardware, (as specified under "Hardware"), adjustable gasketed stops and door "Auto-Seal" threshold crack closers.*

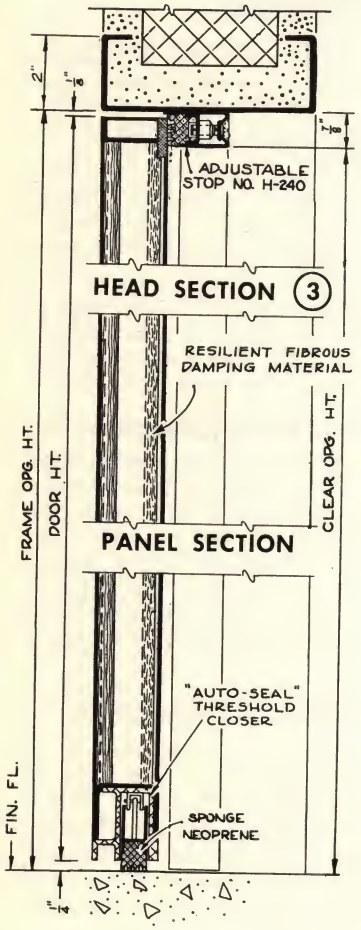
Drawings and Guarantees—*Before any work is started this contractor shall furnish for architect's approval complete shop drawings and the following guarantees:*

(a) *Certification by Riverbank Acoustical Laboratories, Geneva, Illinois or National Bureau of Standards, Washington, D. C. that sound transmission loss of door is not less than 45 db average, based on tests at nine frequencies over a range of 125 to 4000 cycles per second, in accordance with ASTM Sound Transmission Practice E90-55.*

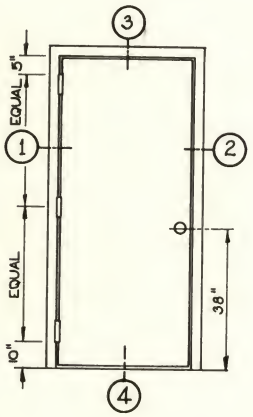
(b) *Written guarantee stating that doors are constructed exactly in accordance with laboratory tested door.*

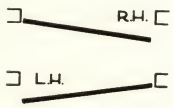
(c) *All equipment furnished under this contract shall be guaranteed free from defects in material and workmanship for a period of one year after installation.*

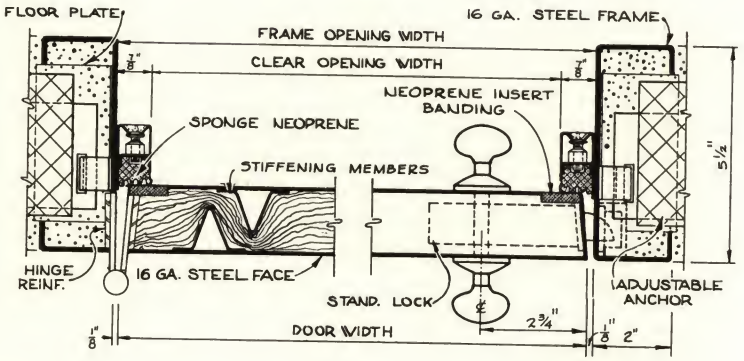
All installation work shall be performed by skilled mechanics in strict accordance with the "Installation Instructions and Procedures" furnished by this door manufacturer.



SILL SECTION (4)







HINGE JAMB SECTION (1)

LOCK JAMB SECTION (2)

SCALE: 3"= 1'-0"

 SCALE TRACING SHEETS OF SONICBAR DETAILS AVAILABLE UPON REQUEST.

INSTITUTIONAL ALSTELE SOUND INSULATING UNITS

STANDARD UNITS TYPE DM2-48

Alstele units consisting of door, frame and adjustable sealing devices are built in the standard sizes shown in right hand column. The standard sizes offer production economies and quick deliveries. Units can also be furnished custom built to almost any opening size or fitted with special hardware.
Standard units are similar to those shown on opposite page for Quiedors except that the heavier duty Alstele units are furnished with 14 gauge frames, *heavy duty* template hinges, "Auto-Seal" combination threshold crack closer and kick plate. Adjustable stops Type H-240 only are furnished.
Standard printed 3" scale drawings suitable for tracing and complete detailed specifications covering the institutional Alstele units are available upon request.

SHORT FORM "SPECS" FOR DM2-48 UNITS

***General**—All door openings shown on plans as "Sound-Proof" shall be Sonicbar institutional units, Type DM2-48 furnished by Firebar Door Division, Rysdon Products Co., Chicago 20, Ill., or approved equal. Units shall include laboratory certified sound insulating 48 db doors, 14 ga. formed frames and adjustable clearance crack sealing devices.*

***Door and Frame Construction**—Doors shall be 1¾" thick, flush design, face panels formed of 16 gauge cold rolled stretcher leveled sheet steel. Panels shall be reinforced and acoustically damped to produce required sound transmission loss. Frames shall be formed of 14 gauge steel with hairline mitered head and jamb welded joints and provided with masonry cover boxes at mortises. Doors and frames shall be factory mortised, reinforced and fitted for template builders hardware, (as specified under "Hardware"), adjustable gasketed stops and door "Auto-Seal" threshold crack closers.*

***Drawings and Guarantees**—Before any work is started this contractor shall furnish for architect's approval complete shop drawings and the following guarantees:*

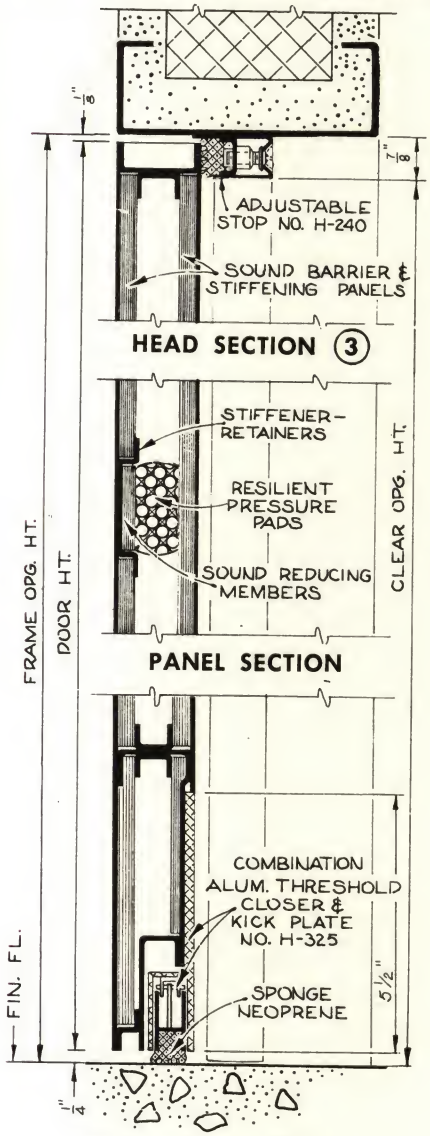
(a) *Certification by Riverbank Acoustical Laboratories, Geneva, Illinois or National Bureau of Standards, Washington, D. C. that sound transmission loss of door is not less than 48 db average, based on tests at nine frequencies over a range of 125 to 4000 cycles per second, in accordance with ASTM Sound Transmission Practice E90-55.*

(b) *Written guarantee stating that doors are constructed exactly in accordance with laboratory tested door.*

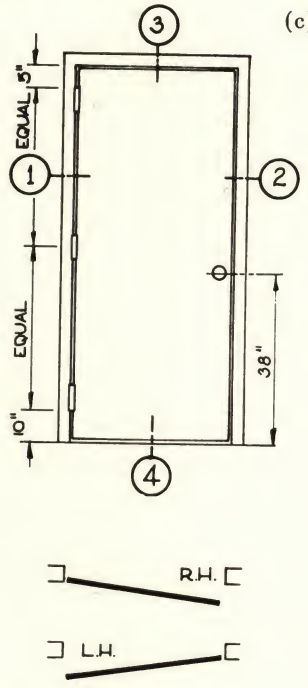
(c) *All equipment furnished under this contract shall be guaranteed free from defects in material and workmanship for a period of one year after installation.*

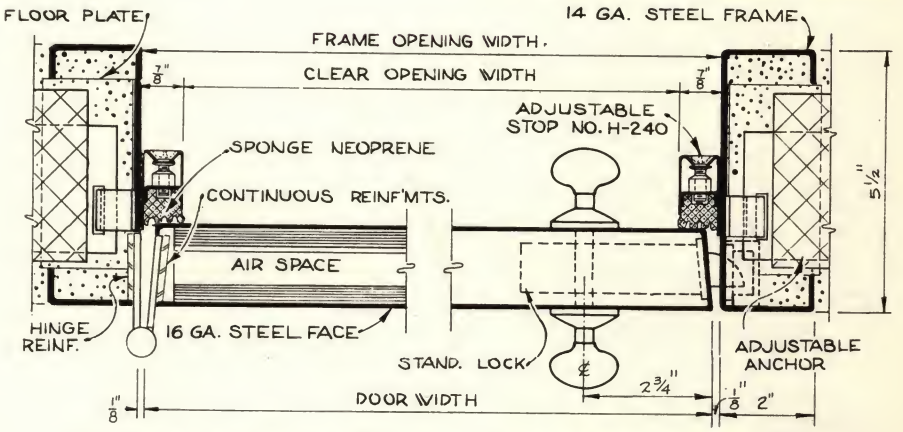
LIST OF STANDARD SIZES AND NOS.

Frame Opg. Size		Stock Nos.
Singles	2'6" x 6'8"	1F7-5DM2-2668
"	2'8" x 6'8"	1F7-5DM2-2868
"	3'0" x 6'8"	1F7-5DM2-3068
"	3'4" x 6' 8"	1F7-5DM2-3468
"	2'6" x 7'0"	1F7-5DM2-2670
"	2'8" x 7'0"	1F7-5DM2-2870
"	3'0" x 7'0"	1F7-5DM2-3070
	3'4" x 7'0"	1F7-5DM2-3470
Pairs	5'0" x 6'8"	2F7-5DM2-5068
"	5'4" x 6'8"	2F7-5DM2-5468
"	6'0" x 6'8"	2F7-5DM2-6068
"	6'8" x 6'8"	2F7-5DM2-6868
"	5'0" x 7'0"	2F7-5DM2-5070
"	5'4" x 7'0"	2F7-5DM2-5470
"	6'0" x 7'0"	2F7-5DM2-6070
"	6'8" x 7'0"	2F7-5DM2-6870



SILL SECTION (4)





HINGE JAMB SECTION (1)

LOCK JAMB SECTION (2)

SCALE: 3"= 1'-0"

SCALE TRACING SHEETS OF SONICBAR DETAILS AVAILABLE UPON REQUEST

INDUSTRIAL QUIEDOR SOUND INSULATING UNITS

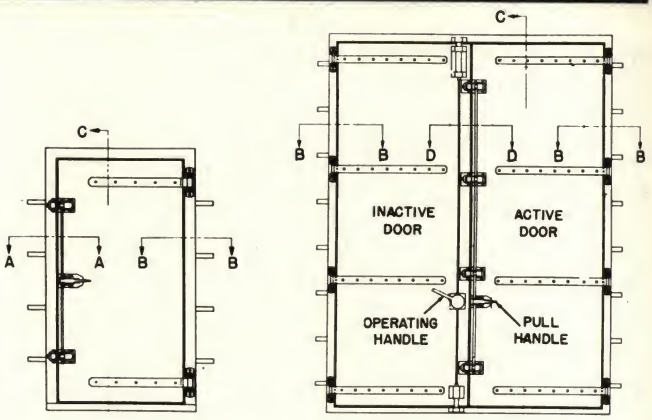
TYPE DQ3-47 UNITS

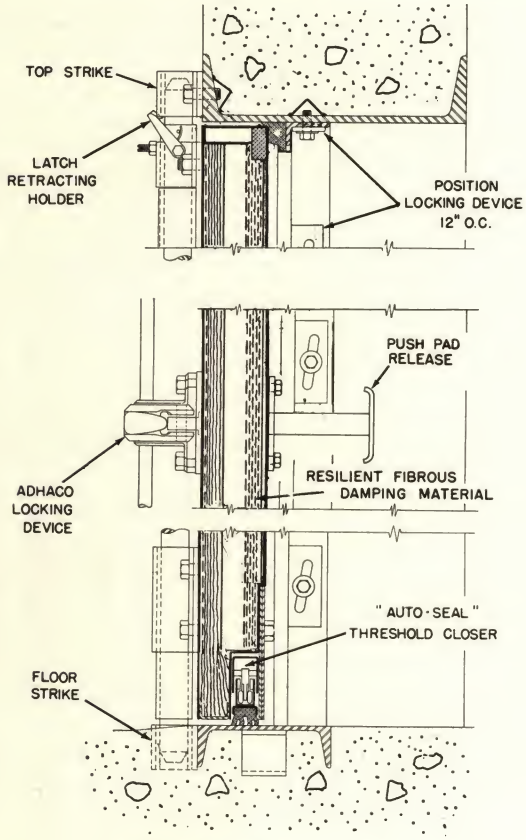
This unit, consisting of our 3" thick Quiedor metal sound insulating door, structural channel frame, Adhaco "Slam" type lock, "Six-Way" hinges, industrial adjustable sealing devices and "Auto-Seal" threshold crack closer, provides excellent operation and high sound reduction at economical cost.

The Rysdon acoustical research laboratory has successfully combined new noise reduction principles with highly efficient fabrication techniques to produce the Quiedor.

Standard Units with heavy duty hardware, frames and seals in standard sizes shown on page 7. Standard drawings DQ3-5904 (singles) and DQ3-5905 (pairs) available for submission of approval drawings or for tracing 3" scale details.

Custom Units can be furnished in a wide range of sizes and operating function to meet a variety of project requirements.





VERTICAL SECTION C-C

SHORT FORM "SPECS" FOR DQ3-47 UNITS

General—*All door openings shown on plans as "Sound-Proof" shall be Sonicbar industrial units, Type DQ3-47 as furnished by Firebar Door Division, Rysdon Products Co., Chicago 20, Ill., or approved equal. Units shall include laboratory certified sound insulating 47 db doors, structural channel frames, special purpose heavy duty hardware and adjustable type clearance crack sealing devices.*

Frames—*shall be factory template fitted, drilled and tapped for all hinge pintles, locking hardware and adjustable sealing devices. Masonry cover boxes to be welded to back side of frame to protect all tapped holes.*

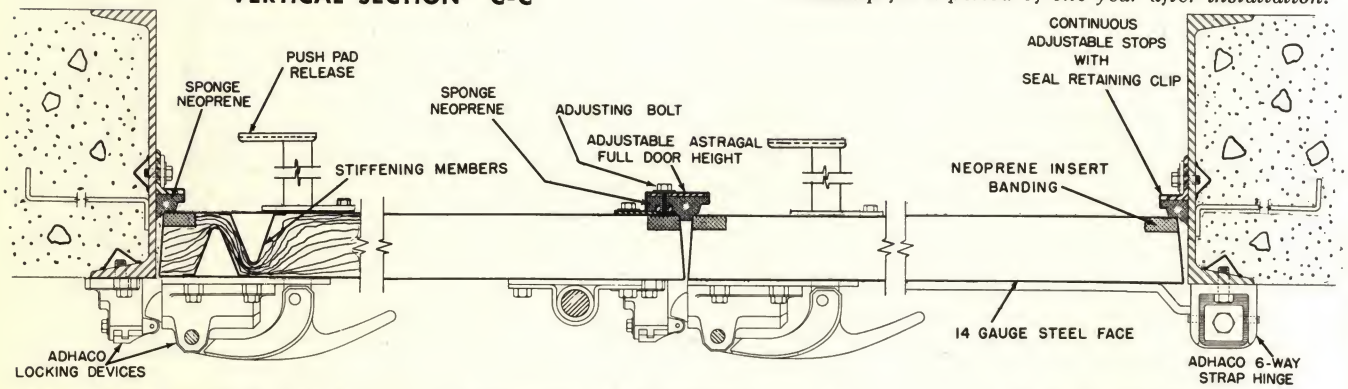
Doors—*shall be constructed with 16 gauge cold rolled steel flush panels backed up with adequate panel reinforcing members. Stop side of door shall have heavy duty Neoprene banding at head and stiles. Face panels shall be separated by sound insulating air space which is maintained by incorporating non-coupling resilient members. Doors shall be adequately reinforced and factory drilled and fitted for all hardware including "Auto-Seal" threshold crack closers.*

Drawings and Guarantees—*Before any work is started this contractor shall furnish for architect's approval complete shop drawings and the following guarantees:*

(a) *Certification by Riverbank Acoustical Laboratories, Geneva, Illinois or National Bureau of Standards, Washington, D.C. that sound transmission loss of door is not less than 47 db average, based on tests at nine frequencies over a range of 125 to 4000 cycles per second, in accordance with ASTM Sound Transmission Practice E 90-55.*

(b) *Written guarantee stating that doors are constructed exactly in accordance with laboratory tested door.*

(c) *All equipment furnished under this contract shall be guaranteed free from defects in material and workmanship for a period of one year after installation.*



LOCK JAMB SECTION A-A MEETING STILE SECTION D-D HINGE JAMB SECTION B-B

SCALE 1½" = 1'-0"

SCALE TRACING SHEETS OF SONICBAR DETAILS AVAILABLE UPON REQUEST

INDUSTRIAL ALSTELE SOUND INSULATING UNITS

TYPE DM3-53 DOORS

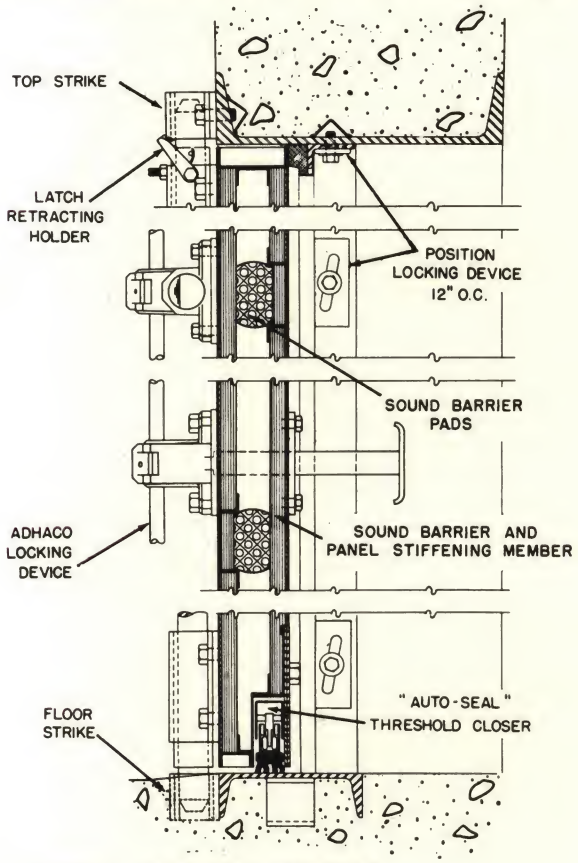
This door was designed to meet the ever increasing need for higher sound attenuation in doors approximately 3" thick. The Alstele with only a small increase in weight attains its higher sound insulating efficiency through the application of new acoustic principles of noise reduction.

The door is constructed with 14 ga. cold rolled steel flush panels backed with reinforcing members and complex acoustical barrier materials. Faces are separated by isolating air space maintained by non-coupling resilient members.

This door has a certification for 53 db by Riverbank Acoustical Laboratories, Geneva, Ill., in accordance with ASTM Recommended Practice E 90-55. This unit, consisting of our 3" thick Alstele metal sound insulating door, structural channel frame, Adhaco "Slam" type lock and "Six Way" hinges together with industrial adjustable seals and "Auto-Seal" threshold crack closer provides finest operation and highest sound attenuation of any 3" door available to industry.

Standard Units are available with hardware, frames and seals in sizes as shown on page 7. Drawings DM3-5806 (singles) and DM3-5807 (pairs) are available for submission of approval drawings or for use in tracing 3" scale details.

Custom Units can be furnished in a wide range of sizes and operating function to meet a variety of project requirements.



VERTICAL SECTION

SHORT FORM "SPECS" FOR DM3-53 UNITS

General—*All door openings shown on plans as "Sound-Proof" shall be Sonicbar industrial units, Type DM3-53 as furnished by Firebar Door Division, Rysdon Products Co., Chicago 20, Ill., or approved equal. Units shall include laboratory certified sound insulating 53 db doors, structural channel frames, special purpose heavy duty hardware and adjustable type clearance crack sealing devices.*

Frames—*shall be factory template fitted, drilled and tapped for all hinge pintles, locking hardware and adjustable sealing devices. Masonry cover boxes to be welded to back side of frame to protect all tapped holes.*

Doors—*shall be constructed with 14 gauge cold rolled steel flush panels backed up with adequate panel reinforcing members. Face panels shall be separated by sound insulating air space which is maintained by incorporating non-coupling resilient members. Doors shall be adequately reinforced and factory drilled and fitted for all hardware including "Auto-Seal" threshold crack closers.*

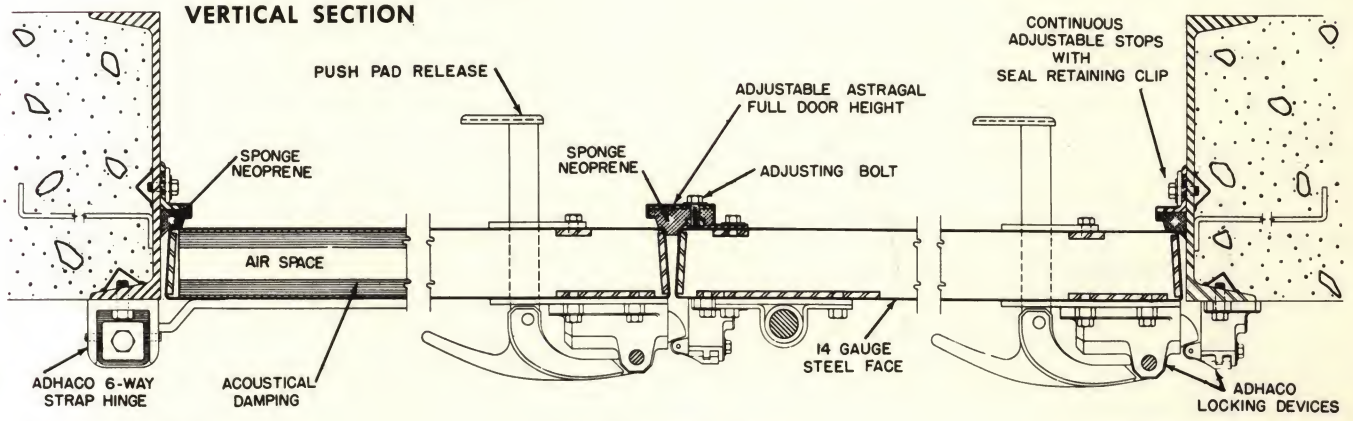
Drawings and Guarantees—*Before any work is started this contractor shall furnish for architect's approval complete shop drawings and the following guarantees:*

(a) *Certification by Riverbank Acoustical Laboratories, Geneva, Illinois or National Bureau of Standards, Washington, D.C. that sound transmission loss of door is not less than 53 db average, based on tests at nine frequencies over a range of 125 to 4000 cycles per second, in accordance with ASTM Sound Transmission Practice E 90-55.*

(b) *Written guarantee stating that doors are constructed exactly in accordance with laboratory tested door.*

(c) *All equipment furnished under this contract shall be guaranteed free from defects in material and workmanship for a period of one year after installation.*

All installation work shall be performed by skilled mechanics in strict accordance with the "Installation Instructions and Procedures" furnished by the door manufacturer.



HINGE JAMB SECTION | MEETING STILE SECTION | LOCK JAMB SECTION

SCALE 1½" = 1'-0"

SCALE TRACING SHEETS OF SONICBAR DETAILS AVAILABLE ON REQUEST

INSTITUTIONAL SLIDING DOORS

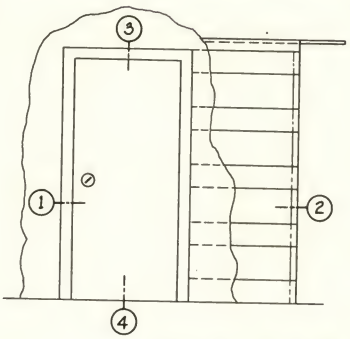
TYPES SQ2-45, SM2-48

A unique system of Acoustilok seals developed by our product research laboratory provides a sliding door unit with the sound insulating qualities of a Sonicbar sound insulating door.

The Acoustilok system consists of an absorbing fibrous glass air seal in the formed trim and expanded metal housings of the frame. Clearance sealing at bottom of door in closed position is accomplished by lever-actuated compressed Neoprene gasket in our "Auto-Seal" threshold crack closer.

Door and frame are standard hollow metal construction of best materials and highest craftsmanship. Frame corners are mitered and ground smooth. Track and rollers provide for easiest, maintenance-free operation.

The Quiedor Type SQ2-45 (45 db) door or the Alstele Type SM2-48 (48 db) door may be specified. For economy in an excellent installation we recommend the Quiedor. For highest sound reduction and best workmanship we recommend the Alstele. See pages 10 and 11 for door construction.

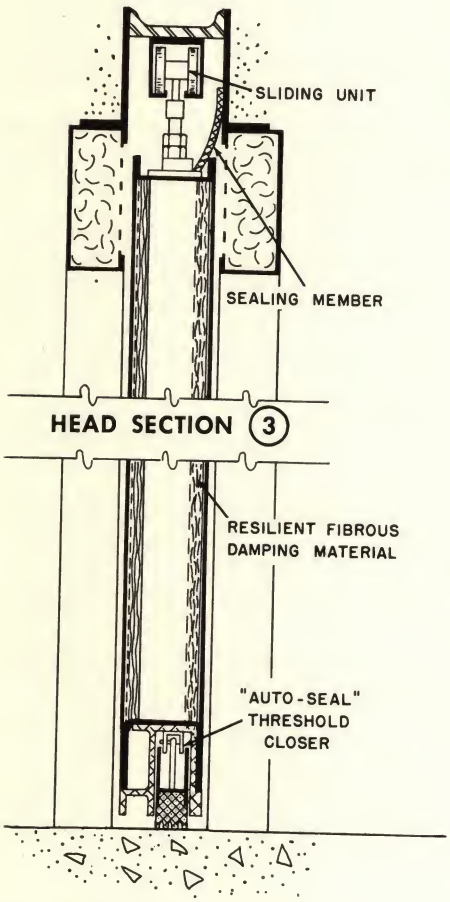


USES:

- Motels, Hotels
- Medical and Dental Suites
- Executive and Legal Offices
- Recording and Music Studios
- Radio and Television Facilities
- Clubs and Lounges

STANDARD SIZES:

2'8" x 6'8"
3'0" x 6'8"
2'8" x 7'0"
3'0" x 7'0"



HEAD SECTION (3)

SILL SECTION (4)

SHORT FORM "SPECS" FOR SLIDING UNITS

General—*All doors shown on plans as "Sound-Proof" shall be Sonicbar units Type (SQ2-45) (SM2-48) furnished by Firebar Door Division, Rysdon Products Co., Chicago 20, Ill. or approved equal. Units shall include laboratory certified (45) (48) db doors, formed metal frames, clearance crack seals and sliding hardware.*

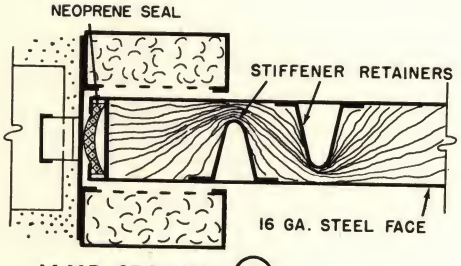
Door and Frame Construction—*Doors shall be constructed with cold rolled steel faces with stiffening members, sound insulating inner construction, and perimeter seals. Doors shall have recessed aluminum "Auto-Seal" threshold crack closers. Frames shall be 16 gauge steel integrally formed trim and jamb members with Acoustilok system of sealing having fibrous glass sound absorption fill or equal. Recess members shall be formed steel to provide a wall pocket and support for sliding hardware.*

Drawings and Guarantees—*Before any work is started this contractor shall furnish for architect's approval complete shop drawings and the following guarantees:*

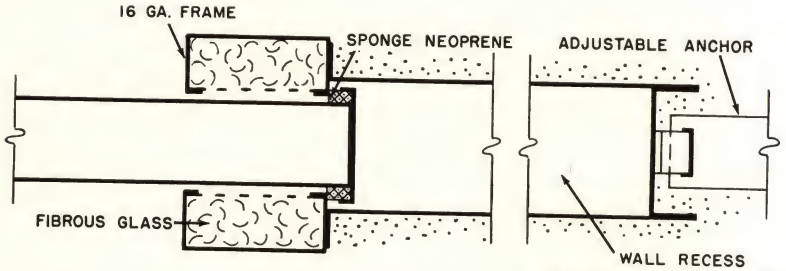
(a) *Certification by Riverbank Acoustical Laboratories, Geneva, Illinois or Bureau of Standards, Washington, D.C. that sound transmission loss of door is not less than (45) (48) db average for nine frequencies over a range of 125 to 4000 cps per ASTM Sound Transmission Practice E90-55.*

(b) *Written guarantee stating that doors are constructed exactly in accordance with laboratory tested door.*

(c) *All equipment furnished under this contract shall be guaranteed free from defects in material and workmanship for a period of one year after installation.*



JAMB SECTION (1)



JAMB SECTION (2)

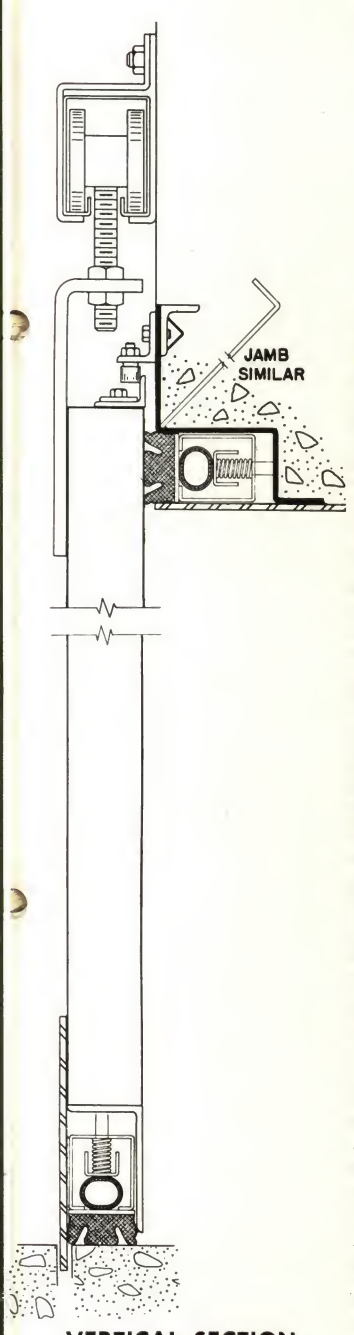
SCALE: 3" = 1'-0"

INDUSTRIAL SLIDING DOORS

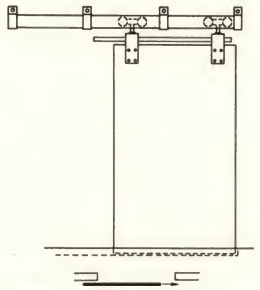
Horizontal sliding doors are advantageous for many door openings where swing doors are impractical due to space factors. The usual difficulty of complete clearance crack sealing on sliding doors has been solved by Rysdon engineers in several combinations of hardware, frame and sealing design.

Both types detailed on this page may be either manual or power operated and each has certain advantages depending on job requirements. Minimum dimension between head and ceiling is approximately 18″ for manual operation and 36″ for power operation.

Vertical sliding doors are similar to these. We will be happy to work out requirements.



VERTICAL SECTION



TYPE 3FG

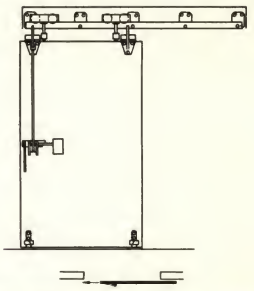
When positive sealing, heavy doors or large openings are required, we recommend this opening. "Auto-Air" Seal installed in integral frame housing (Type F6, Page 6) and on bottom edge of door, provides positive clearance crack sealing for sound, moisture, dust, gases and nominal air pressure differences.

Seals are efficient on most types and sizes of doors for manual (or power) operation. Standard types and sizes of tracks and hangers may be used depending on size and weight of doors and on type of operation and service. Features include complete pneumatic sealing with operating pressures up to 100 psi; positive mechanical seal retraction; minimum maintenance.

SPECIFICATIONS

Doors shown on plans and door schedule as sound-proof horizontal sliding shall be "Sonicbar" units by Firebar Door Div., Rysdon Products Co., Chicago 20, Ill. Units shall be complete, ready to install and include doors; "Auto-Air" seals; frames incorporating seal housings; and door hardware including tracks and hangers. Frames shall be 12 ga. formed steel full wall thickness (as detailed) incorporating seal housings and mechanism within frame at jambs and head. Seal spring retracting stud shall be accurately located to template within the seal housings. (See Pages 12 or 13 for door construction specification).

Neoprene gasket seals shall be pneumatic operated so that inflatable members force gasket against door surface to seal clearance crack. Sliding hardware shall consist of heavy duty industrial track and door hangers of ample capacity for size and weight requirements to enable proper door operation.



TYPE 3H-610

This arrangement of hardware and seals is suitable for doors not exceeding 6,000 lbs. and not exceeding 8′0″ width. Not recommended where seals are expected to maintain different pressures on opposite sides of door. Doors can be manually or power operated from either side.

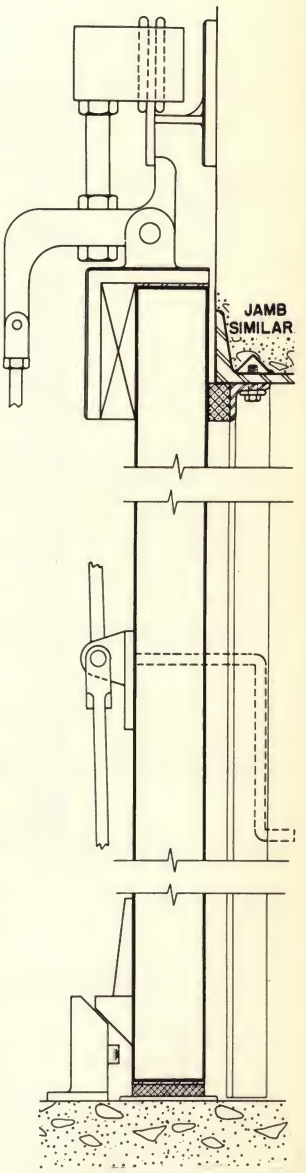
SPECIFICATIONS

Openings shown on plans as sound proof horizontal sliding shall be Sonicbar units furnished by Firebar Door Div., Rysdon Products Co., Chicago 20, Ill. Openings shall include sound insulating doors, sliding hardware, adjustable clearance crack closure seals together with manual (or power) operators.

Frames shall be furnished by others under miscellaneous iron.

(See Page 12 or 13 for door construction specification).

Zerk fittings shall be installed at all friction points of operating hardware which shall include overhead rail assemblies, integral adjustable stops, truck housings, hook and bracket assemblies, crank shafts, handles, brackets and door wedges. Hardware shall provide on and off cam action thru leverage to assure positive sealing and door alignment. Opening and closing of doors and lever operation for sealing shall be manual. (Doors shall be power operated and this contractor shall furnish all power operating equipment including switches, valves, motors—electric, pneumatic, or hydraulic — and other components necessary for door operation. All wiring and piping shall be by others).



VERTICAL SECTION

GUARANTEE

A written guarantee shall be furnished stating that doors are constructed exactly in accordance with laboratory tested units. Copy of test by National Bureau of Standards or Riverbank Acoustical Laboratories shall be furnished showing doors have a loss of .....decibels, based on 125 to 4000 cps. Installation shall be by skilled mechanics in accordance with "Installation Instructions and Procedures" by door manufacturer. Equipment furnished shall be guaranteed free from defects in material and workmanship for one year after installation.

SCALE: 1½″ = 1′-0″

INSTITUTIONAL SLIDING WAL-DOR

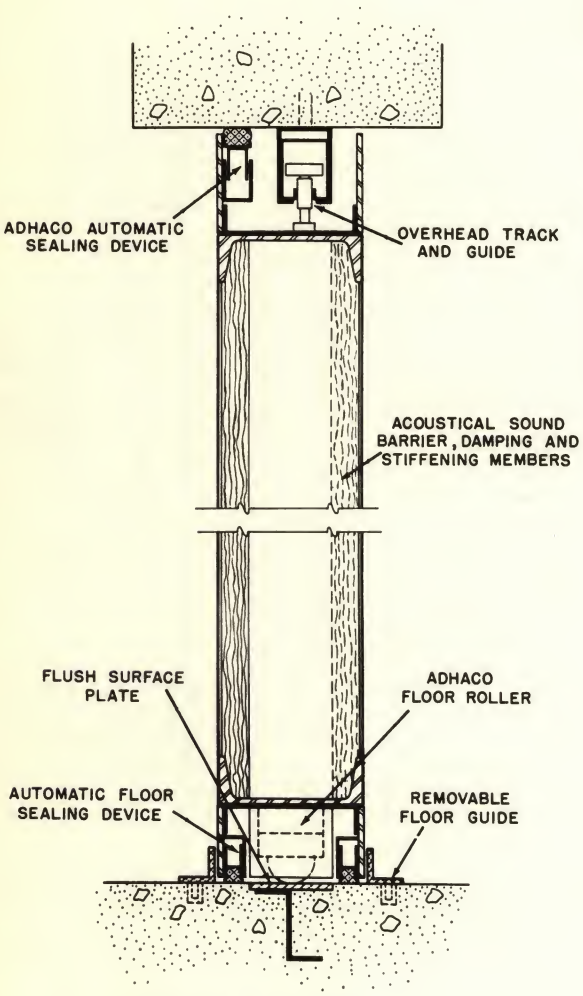
TYPE SM6-55

Wal-Dor units provide a new concept in sliding partitions since they offer approximately the same sound attenuation obtained from a solid 8" poured dense concrete wall. They fill the need in meeting halls for a room dividing partition which can easily be moved into position and which provides high sound isolation for both sides.

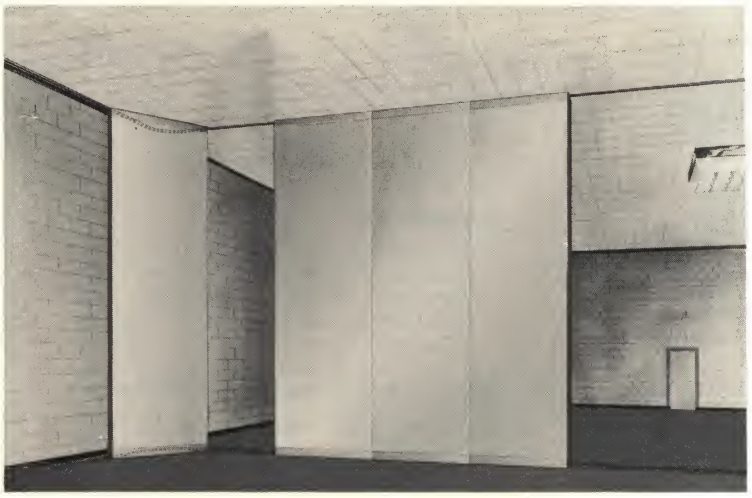
These units are especially desirable in modern buildings where space for multiple usage is at a premium, such as in churches, schools, and similar institutions.

Wal-Dor partitions are furnished in any width and up to 30 feet in height in 3" to 6" thickness, depending on sound insulation required and on ceiling height. Overhead door hangers are provided where ceiling construction will support partition weight; and when this is not feasible, units are mounted on concealed floor rollers with overhead guides.

Preliminary layout incorporating Wal-Dor features, storage spaces, personnel doors, alternate methods of operation, etc., furnished on request.


ADHACO AUTOMATIC SEALING DEVICE
OVERHEAD TRACK AND GUIDE
ACOUSTICAL SOUND BARRIER, DAMPING AND STIFFENING MEMBERS
FLUSH SURFACE PLATE
ADHACO FLOOR ROLLER
AUTOMATIC FLOOR SEALING DEVICE
REMOVABLE FLOOR GUIDE

VERTICAL SECTION



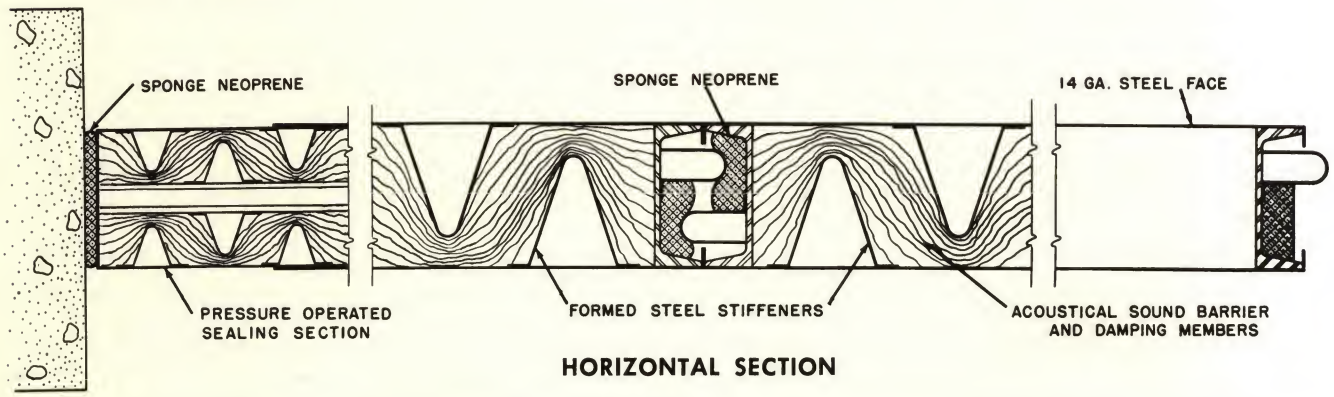
Wal-Dors provide high sound insulation in a movable partition.

SHORT FORM "SPECS" FOR SM6-55 UNITS

Sound insulating partitions shown on plans shall be Type SM6-55 units, furnished by Firebar Door Division, Rysdon Products Co., Chicago 20, Ill., or approved equal.

Openings shall include 6" thick Wal-Dor sound insulating partitons, panel perimeter sealing devices, (overhead tracks and door hangers) or (concealed floor rollers, floor plates and overhead guides) and all operating devices. Doors shall be flush panel design full height and shall be acoustically designed to produce the required sound reduction.

A written guarantee shall be furnished stating that doors are constructed exactly in accordance with laboratory tested units. Copy of test by National Bureau of Standards or Riverbank Acoustical Laboratories shall be furnished certifying doors have a loss of 55 decibels, based on 125 to 4000 cps. Equipment furnished shall be guaranteed free from defects in material and workmanship for one year after installation.



HORIZONTAL SECTION

SCALE: 1½" = 1'-0"

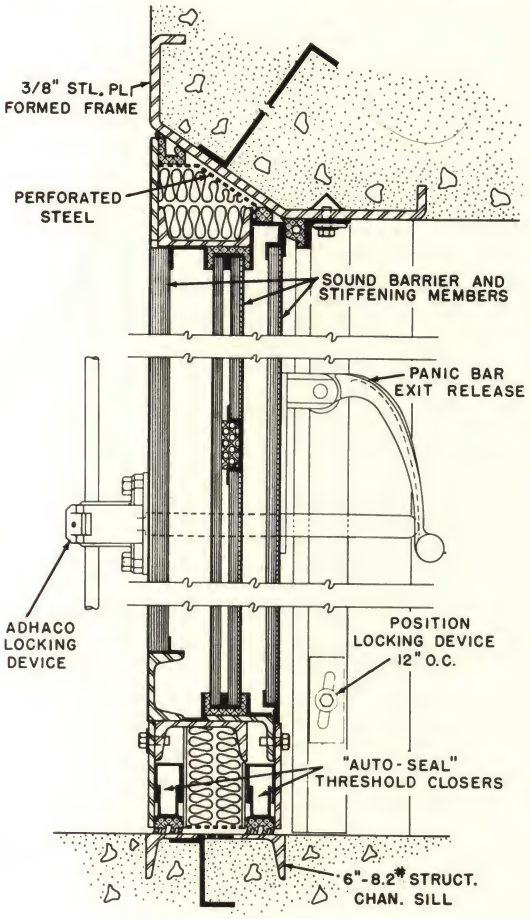
INDUSTRIAL ACOUSTIDOR UNITS

TYPE DA6-60 — FOR HIGHEST NOISE REDUCTION

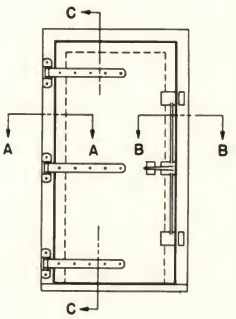
The Acoustidor Unit, consisting of 5¾" thick ruggedly built door, formed steel plate frame, heavy duty hardware and multiple perimeter seals, provides sound reduction equivalent to 12" poured dense concrete walls.

This extremely high sound reduction in a single door is obtained with massive construction, laboratory engineered isolated panels, acoustical damping members and insulating air spaces.

Complementing the door construction is a unique perimeter sealing system with Acoustilok and multiple Neoprene seals.



VERTICAL SECTION C-C



SHORT FORM "SPECS" FOR TYPE DA6-60 UNITS

***General**—All doors shown on plans as "Sound-Proof" shall be Type DA6-60 furnished by Firebar Door Division, Rysdon Products Co., Chicago 20, Ill. or approved equal. Units shall include laboratory certified 60 db doors, formed metal frames, multiple perimeter sealing devices, heavy duty hardware and multiple "Auto-Seal" threshold crack closers.*

Door shall be 5¾" thick and constructed with 14 gauge cold rolled steel panels backed up with adequate panel reinforcing members. Stile and rail members shall be 12 gauge steel plate formed to profiles as shown. Interior of door shall incorporate a 40 db sound insulating septum mounted in sponge Neoprene isolating gaskets which also provides insulating air spaces.

Multiple perimeter sealing devices shall include four Neoprene gasket seals with one set of fully adjustable stops and fibrous glass filled Acoustilok at edges. Meeting stiles of pairs to have four Neoprene gasket seals full height of door including fully adjustable astragal.

Frames shall be formed steel plate and shall be factory template fitted, drilled and tapped for all hinge pintles, locking hardware and sealing devices.

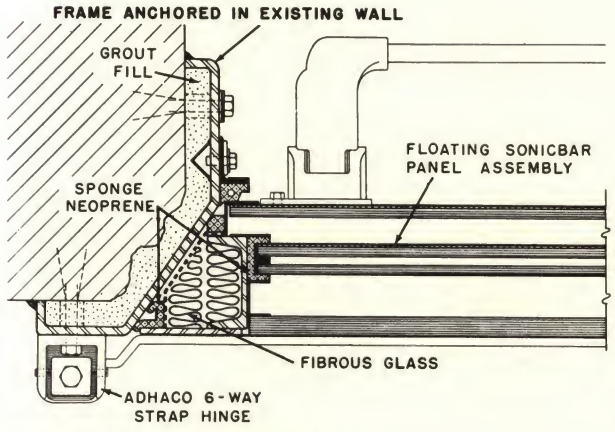
***Drawings and Guarantees**—Before any work is started this contractor shall furnish for architect's approval complete shop drawings and the following guarantees:*

(a) *Certification by Riverbank Acoustical Laboratories, Geneva, Ill. or Bureau of Standards, Washington, D.C., that sound transmission loss of door is not less than 60 db average, based on tests at nine frequencies over a range of 125 to 4000 cps in accordance with ASTM Sound Transmission Practice E 90-55.*

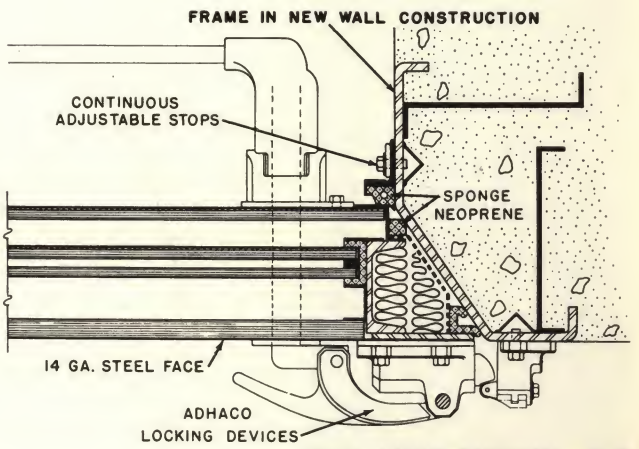
(b) *Written guarantee stating that doors are constructed exactly in accordance with laboratory tested door.*

(c) *All equipment furnished under this contract shall be guaranteed free from defects in material and workmanship for a period of one year after installation.*

All installation work shall be performed by skilled mechanics in strict accordance with the "Installation Instructions and Procedures" furnished by this door manufacturer.



HINGE JAMB SECTION A-A



LOCK JAMB SECTION B-B

SCALE: 1½" = 1' 0"

SOUND LOK OPENINGS

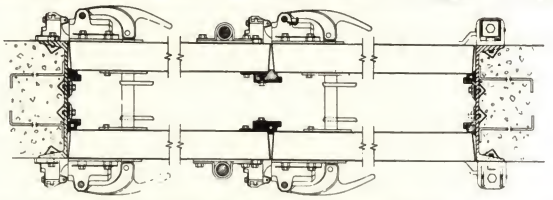
GENERAL INFORMATION

The Sonicbar Sound Lok openings are produced by using double sets of doors (singles, pairs or sliding) thereby utilizing the trapped air space between doors to provide a very high degree of noise reduction. In single walls the Sound Lok arrangement results in approximately 33% more sound attenuation than is obtained by one door in the opening. The amount of increase varies depending on amount of air space between two door faces.

An even higher noise reduction can be obtained with Sound Lok arrangement in double (cavity) walls in which doors are installed in two separate frames. Depending upon the amount of separation between door faces, an increase of approximately 50% sound attenuation is obtained from this design. Thus reductions up to 85 db are possible.

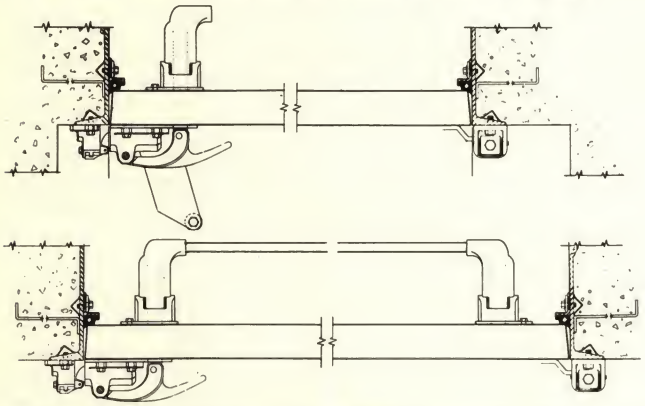
OPPOSITE SWING OPENINGS

Sound Lok Opposite Swing openings may be built from standard sizes and types of doors, frames and hardware. To accommodate project requirements they can also be custom built to any size or hardware function. Standard sizes shown on page 7.



TANDEM (PANIC) SWING OPENINGS

Sound Lok Tandem Swing openings, in which both doors swing in the same direction, have special hardware requirements and a definite relationship in the size of the "small" and "large" sides. For these reasons only a limited number of sizes are available in standard sizes as shown on page 7.

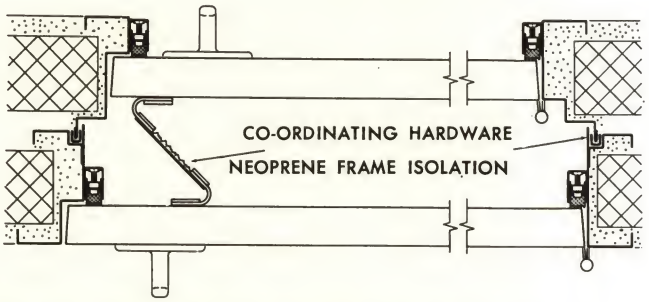


Sound Lok Tandem Swing door installation in aircraft engine test cells at Chanute AFB, Rantoul, Ill. provides entirely adequate noise reduction.

CO-ORDINATED TANDEM UNITS

The Sound Lok co-ordinated door consists of two doors which operate from either side as one. Drawing and photograph show institutional type which gives up to 80 db noise reduction. Note that frames are isolated from each other by Neoprene insert, assuring highest efficiency when installed in double (cavity) walls. Doors also are mechanically isolated from each other as shown.

Sonicbar Co-Ordinated Sound Lok Unit installed in double (cavity) walls at television station WBKB, ABC-TV owned and operated station, Chicago, Ill.



SHORT FORM SOUND LOK SPECIFICATIONS

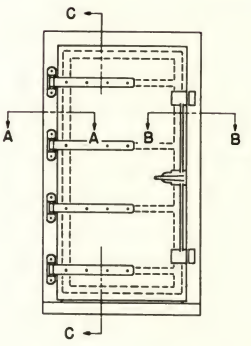
All door openings having double doors in each opening, and shown on plans as "sound-proof" shall be Sonicbar Sound Lok units as furnished by the Firebar Door Division, Rysdon Products Company, Chicago 20, Illinois.

Note: Select the type of door construction desired and add balance of specifications from other pages relating to various door constructions, hardware, guarantee, laboratory certification, etc.

BLAST RESISTANT DOORS

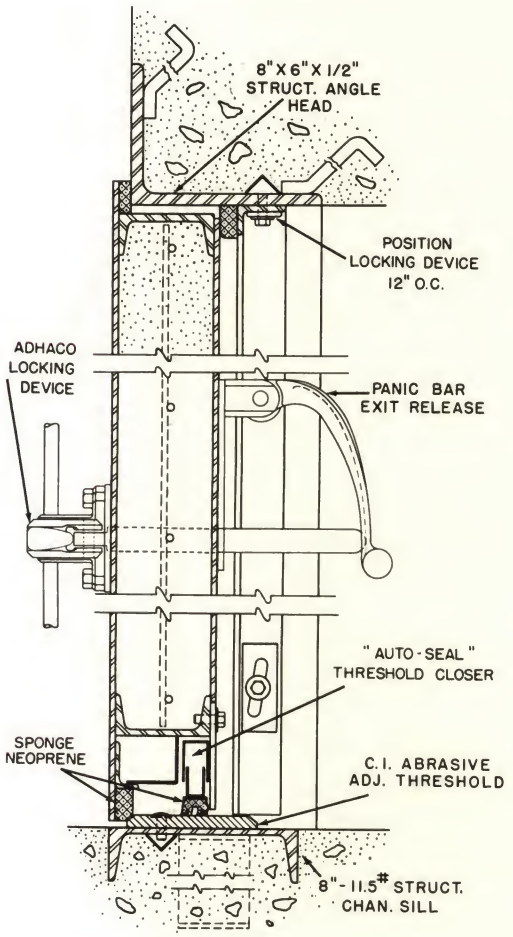
TYPE DC4-41

The Stelecrete Unit is designed to provide a rugged blast resistant and sound retarding door operating with heavy duty hardware and adjustable sealing devices.
The 4½" thick door in sizes up to 3'6" x 7'0" is designed for 1000 p.s.f. and 41 db sound reduction. Thicknesses up to 12" with face plates up to 1" thick are furnished for higher blast resistance. Recommended thicknesses for various sizes and blast pressures furnished on request.



STANDARD SIZES

Frame Opg.	Size
Singles	3'0" x 7'0"
	3'6" x 7'0"
	4'0" x 7'0"
	4'0" x 8'0"
	5'0" x 7'0"
	6'0" x 7'0"
Pairs	5'0" x 7'0"
	6'0" x 7'0"
	6'0" x 8'0"
	7'0" x 7'0"
	8'0" x 7'0"
	8'0" x 8'0"



VERTICAL SECTION C-C

SHORT FORM "SPECS" FOR DC4-41 UNITS

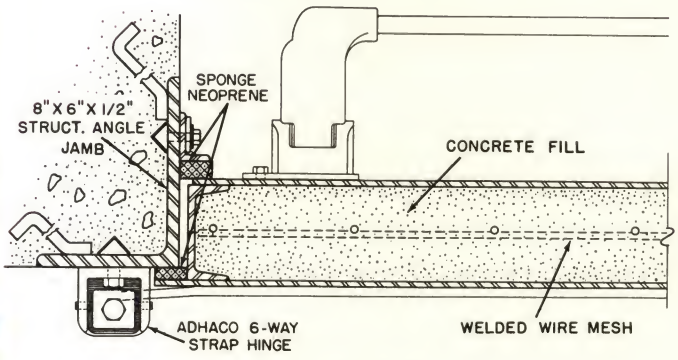
***General**—All door openings shown on plans as "Blast-Proof" shall be Type DC4-41 furnished by Firebar Door Division, Rysdon Products Co., Chicago 20, Ill. or approved equal. Units shall include laboratory certified 41 db steel plate concrete fill doors, structural steel frames, and heavy duty adjustable hardware and dual clearance crack seals.*

***Door, Frame and Seals Construction**—Doors shall be constructed of ¼" steel plates both faces, structural channel perimeter and interior members, welded wire mesh concrete reinforcing, and shall be factory vibrator filled with concrete. Frames shall be welded structural steel shapes as shown, factory template fitted, drilled and tapped for hinge pintles, locking hardware and sealing devices.*
Double perimeter sealing devices shall be provided; one set shall be fully adjustable. "Auto-Seal" threshold crack closers and adjustable thresholds with cast iron abrasive sills shall be provided.

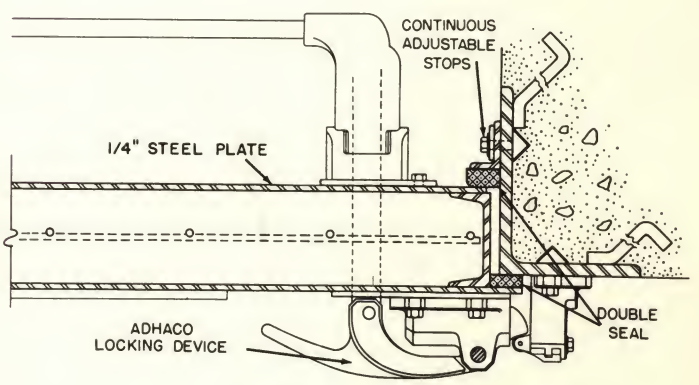
***Guarantees**—A written guarantee shall be furnished stating doors are constructed exactly in accordance with laboratory-tested units. A copy of test by National Bureau of Standards, Washington, D. C., or Riverbank Acoustical Laboratories, Geneva, Ill., shall be furnished, certifying that doors have a transmission loss of 41 decibels (4½" thickness) based on the average of nine tests over a range from 125 to 4000 cps.*

All equipment furnished under this contract shall be guaranteed free from defects in material and workmanship for a period of one year after installation.

Installation shall be performed by skilled mechanics in strict accordance with the "Installation Instructions and Procedures" furnished by door manufacturer.



HINGE JAMB SECTION A-A



LOCK JAMB SECTION B-B

SCALE: 1½" = 1' 0"

BLAST RESISTANT DOORS

Our designation "Blast Resistant Doors" refers to all types of doors, frames, hardware, sealing devices and operators which are designed for the primary purpose of resisting forces from high explosive chemical or nuclear blasts.

In addition to withstanding blast force and rebound, doors in this category are usually required to perform other duties such as radiation shielding, gas tight sealing, thermal insulation, operation from both sides, panic exit, etc.

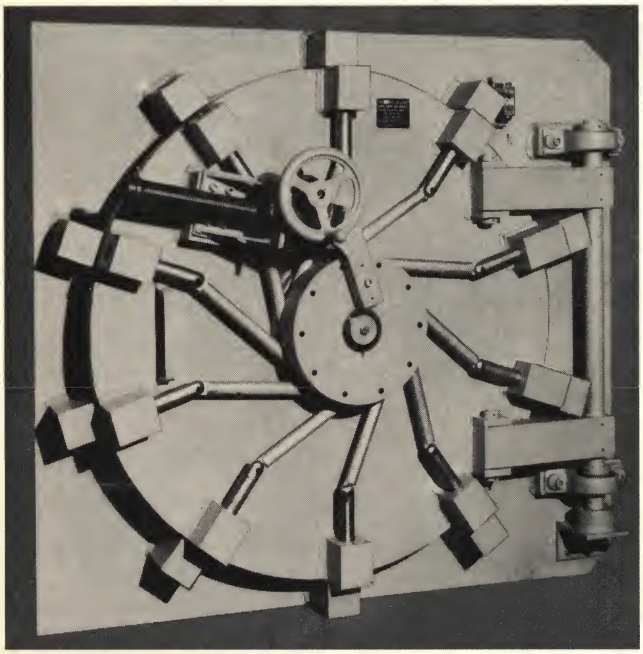
Product development engineers and designers in the Rysdon organization, through many years' experience in designing a wide range of doors, hardware, frames, sealing devices, and manual or power operators, have the "know how" to cope with the constantly changing designs, weights and sizes of blast resistant doors required to meet new developments of modern technology.

Depending upon the size of door opening, anticipated amount and duration of blast force, ease of door operation requirements, etc., we custom design doors in varied constructions ranging from single thickness steel plate to laminated welded plates, cast iron or complex plate and structural steel weldments with special concrete or radiation resistant filling material.

Likewise, the type of door operation which is most desirable varies with almost every project. As a result, we have designed blast resistant doors not only in the conventional hinged swinging type, but also as vertical counterbalanced sliding and horizontal sliding types.

An important phase of our designing services includes furnishing for approval, a complete dynamic analysis verifying blast resistance of door, frame and hardware construction; permanent deformation; concrete frame anchorage; etc.

When required by these newer problems in advanced engineering, our staff is augmented by expert consultants in the fields of blast resistance, nuclear engineering, etc. We offer the services of our engineering staff to assist you in the preparation of designs and specifications for blast resistant door openings.



This Blast Resistant Door is one of a number designed and fabricated by Rysdon engineers and metal craftsmen for the Corps of Engineers, U. S. Army at Cape Canaveral, Florida. This unit is designed to withstand over 500 p.s.i.g. for about 2 milliseconds with a high percent rebound. This door can be operated from both sides and in the closed position is gas tight.

SHORT FORM SPECIFICATIONS

Where shown on plans as Blast Resistant (Nuclear Shielding) doors, frames, hardware and sealing devices shall be furnished by Firebar Door Division, Rysdon Products Company, Chicago 20, Ill. Doors shall be built to resist a blast force of.....p.s.i.g. for duration of.....milliseconds and maximum permanent deformation shall not exceed..... inches. Analysis of frame anchorage and door components shall be based on rebound force of..... % of blast force. With the submission of drawings for approval, door manufacturer shall submit a dynamic analysis, verifying blast resistance, maximum permanent deformation, anchorage and locking members for door, frame and hardware. (When required, doors shall be gas tight before and after blast.)

All materials furnished under this contract shall be guaranteed against defective labor and materials for a period of one year after installation.

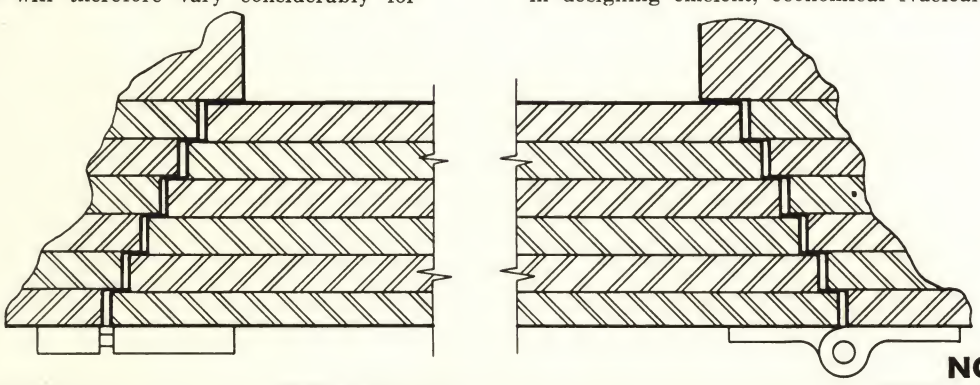
NUCLEAR SHIELDING DOOR

The Nuclear Shielding door is similar to the Blast Resistant door in size, weight and general type of hardware used. It sometimes differs in the kind of materials used and more emphasis may be placed on the close tolerance machined meeting surfaces of door and frame. This provision results in metal-to-metal contact between door and frame, thereby minimizing radiation "streaming."

The constantly increasing industrial applications of Atomic Energy create new radiation door closure problems. The type and design of door will therefore vary considerably for various installations.

The diagram below indicates laminated and welded steel plate door and frame construction. Other effective radiation shielding door constructions include cast iron, solid steel plate and steel plate weldments with cavity between plates filled with magnetite or other shielding material.

Careful attention is given to every detail of construction on each door design. Frames are scientifically built to provide proper radiation shielding at vital locations around the door frames. Our engineering department will be pleased to assist in designing efficient, economical Nuclear Shielding doors.

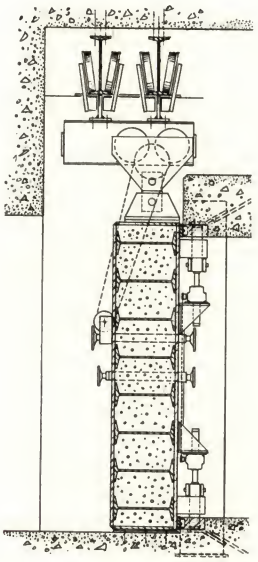


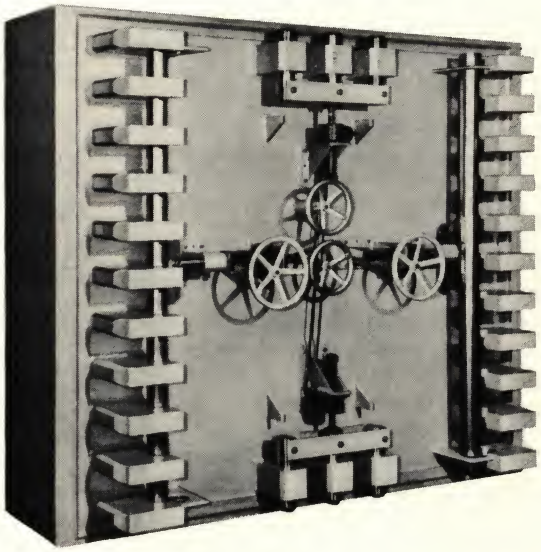
NOT TO SCALE

BLAST RESISTANT DOORS

The two door openings illustrated below indicate alternate methods of operation for a blast resistant project. As designed, the door weight is approximately 20 tons. Design criteria governing both layouts are:

(a) Blast force: 2800 p.s.i.
(b) Theoretical rebound: approximating 100%
(c) Blast duration: 2 milliseconds
(d) Maximum allowable permanent door deformation: ½"
(e) Gas tight before and after blast
(f) Doors operable from both sides
(g) Doors can be manual or power operated

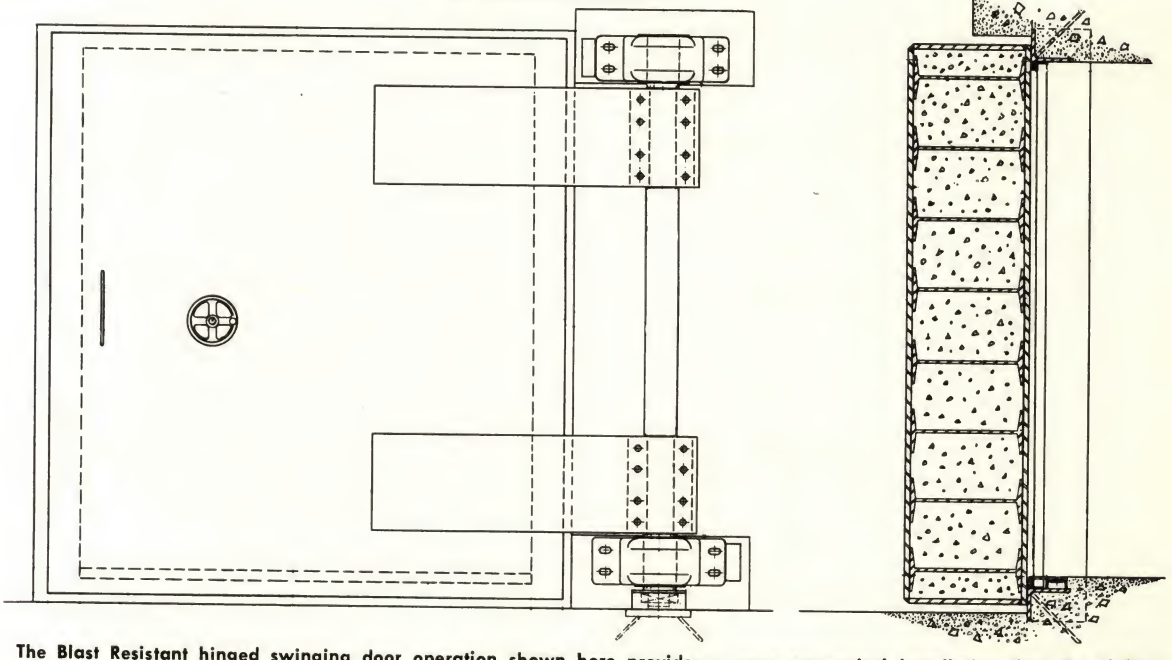




Engineered and fabricated by Rysdon Products Company for the U. S. Army, Corps of Engineers, this Blast Resistant door, one of several of same general type, is installed at Cape Canaveral, Fla. Design criteria: withstands blast force of 2800 psi for 2 milliseconds; rebound, 100%. Door operation shown above is unique since it provides for sliding operation in four directions. The design offers considerable economy in critical floor space.

Blast Resistant and Nuclear Shielding door closures are specified for use in:

1. Nuclear Plants
2. Radiation Facilities
3. Explosives Manufacture
4. Rocket Launching
5. Ordnance Manufacture
6. Test Facilities
7. Protective Construction
8. Personnel Shelters



The Blast Resistant hinged swinging door operation shown here provides a more economical installation than the sliding door above at the expense of over 11'0" radius floor space.

NOT TO SCALE

FUNDAMENTALS OF SOUND CONTROL

THE ARCHITECT AND NOISE CONTROL

1. Erect Suitably Heavy Walls

Dense concrete, masonry, brick, concrete block or plastered walls are necessary. In general 12″ concrete has about 55 db sound reduction, and 6″ about 50 db. Double (cavity) walls may be necessary in extreme cases.

2. Provide a Sound Tight Roof

The roof must generally be comparable in sound isolation to walls, or good walls are not justified. Ventilation openings must be kept to a minimum and may require special acoustic treatment.

3. Design Windows for Minimum Sound Loss

Multiple thick glass plates spaced several inches apart sometimes must be used and glass area should be kept to a minimum.

4. Close Up All Unnecessary Openings

Utilities, conduits, pipes, operating linkages, etc. may require openings in walls. These must all be sealed.

5. Analyse Requirements for Sound Absorption

Intended use of the space will govern amount and type of sound absorption such as acoustical ceiling tile, draperies, etc.

6. Insist On Certified Sound Insulation Tests

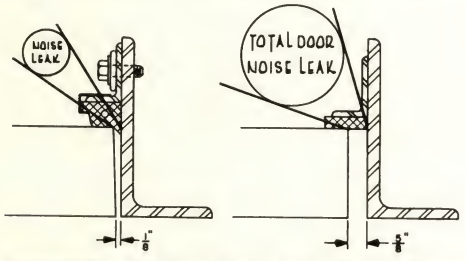
It is not sufficient for the architect, contractor, or engineer to know that a building element is "tested," "laboratory tested" or even "backed by bond." It is important that he simply insist on a test by a "recognized" laboratory such as the National Bureau of Standards or Riverbank Acoustical Laboratories of Armour Research Foundation. These are "recognized" agencies who make the American Society of Testing Materials' test on sound transmission loss through walls, floors, ceilings, windows, doors and similar building elements. The test report supplied by one of these agencies should be insisted upon by the prospective purchaser. Any firm that has its products so tested is able and proud to supply further information.

7. Select and Specify Door Openings that will Effect the Desired Sound Reduction

The design elements which should be carefully checked are:

(a) *Clearance space around doors—Sound leaks caused by clearance space between door and frame, door and sill or threshold are frequently overlooked by specification writers with the result that door openings do not produce "on the job" sound attenuations comparable with the door panel rating.*

The following sketches indicate the range of variation in clearance cracks which are designed into various "sound-proof" door openings:



Sketches show comparative clearance cracks and schematic comparisons of "noise area" leaks.

Illustrating this principle on a typical door opening, we find that the perimeter of a 3′0″ x 6′8″ door is 19′4″. With a 1/8″ clearance at head, sill and both jambs, the clearance crack sound leak area totals 29 sq. in. or 1/5 of a square foot.

With a clearance of 5/8″ all around the door, the clearance crack develops 145 sq. in. or one square foot of noise area leakage.

This is the basic weakness in many so-called "sound-proof" door installations, particularly in industrial areas where a high degree of noise reduction is required.

(b) *Clearance crack seals or gaskets—It should be recognized that clearance crack seals cannot be comparable to the door itself unless (1) they seal the opening completely, and (2) they have the same mass as the door.*

Recognition of the above requirements indicates the need for a seal to have:

(1) *Compliance so as to fit snugly, to close the crack openings and to compress tightly against door and frame members.*

(2) *Mass—must be heavy or dense as possible and still retain sufficient resilience to recover strength and resist fatigue.*

(3) *Size—must be large enough to make the sound path through itself as long as feasible.*

Sponge Neoprene of the proper weight and resilience in moulded or extruded shapes is one of the best materials to fulfill the above requirements. In order to maintain its effectiveness, however, the seal must also be:

(1) *Resistant to wear and other elements contacting it such as: oil, grease, dirt, etc.*

(2) *Fully adjustable so that wear or "compression set" in the seal can be compensated.*

(3) *Reasonably well protected by housing members to lessen likelihood of tearing.*

(4) *Securely fastened without use of adhesives to facilitate easy replacement.*

When crack clearances are kept to a practical minimum and seals meet all of the above design criteria the loss in sound attenuation of a door opening will be reduced by 3 to 7 db. From this example of the effect of ideal sealing, it may be safely concluded that improper sealing of clearance cracks will reduce the efficiency of sound insulating door openings by a very large percentage.

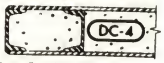
MASS LAW VERSUS ACOUSTICAL DESIGN

When considering the type of door to specify for "sound-proof" openings, it is of utmost importance to consider the mass or weight of the door panel. The difficulty with which a door is operated by personnel and its maintenance costs are usually in direct relation to its weight.

Since many "sound" doors are manufactured on the "Mass Law" principle, and some even add bulky construction to this weight, it therefore may be well to examine the following test data on doors built entirely on the "Mass" principle.

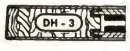
A. Solid Wood Door, 2 1/2″ thick
Wt. 12.5 psf—Rating 30 db

B. Steel Plate & Concrete Door, 4 3/8″ thick
Wt. 39 psf—Rating 41 db



The above illustrates the Mass Law which holds that if the weight is doubled, the sound attenuation is increased by 6 db. On the other hand, observe the test data for the following doors which are dependent for their sound attenuating efficiency not only on their weight or mass, but primarily on their acoustical design:

C. Metal Covered Door, 3″ thick
Wt. 14 psf—Rating 45 db



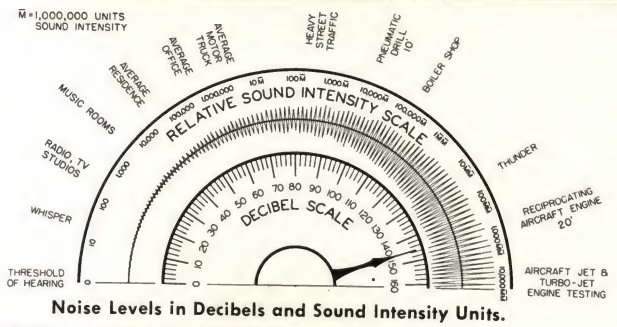
D. Alstele Flush Metal Door, 1 3/4″ thick
Wt. 10 psf—Rating 48 db

E. Alstele Flush Metal Door, 3″ thick
Wt. 18 psf—Rating 53 db

Since the cost of doors, hardware and frames is directly related to the door weight and the operation of doors becomes easier as the weight is decreased, it is of vital importance that acoustical designing be incorporated into the manufacture of "sound proof" doors, rather than the "Mass Law" principle.

Send for Brochure:

FUNDAMENTALS OF SOUND CONTROL



Noise Levels in Decibels and Sound Intensity Units.

COMMON SOUND LEVELS

The chart shows the range of sounds which can be heard by human ears. This range extends from O decibels, which is the point where very acute ears begin to hear, to 160 decibels which is even higher than the region of pain.

NEED FOR SOUND ATTENUATION

One purpose of building walls is to reduce noise at injurious sound levels down to conditions which are not offensive. Heavy masonry such as a 12 inch dense concrete wall will reduce sound about 55 decibels. This means that if a modern jet engine were operating within a test cell with 12 inch concrete walls, the level inside might be about 155 decibels, and that outside would be 100 decibels. In order to preserve the relatively high attenuation of the walls, the architect must design wall elements properly.

SAFE SOUND LEVELS

Walls, windows, and doors must reduce intense noises to sound levels which are not hazardous to hearing. Authorities such as H. C. Hardy (Jour. Acoustical Soc. of America, Nov., 1952) and L. L. Beranek, (Trans. Chem. Eng. Conf., Hyg. Found. of America, Nov., 1950) agree as to limiting or safe levels.

In the table the number below each octave is given by these authorities as the limit above which hazard to hearing might exist for exposure during most of the working day over a period of years. These might be called safe levels, at least until more is learned about hazardous levels.

Octave Bands, cps:	Below 75	75 150	150 300	300 600	600 1200	1200 2400	2400 4800	Above 4800
Decibel Levels:	107	101	97	95	94	91	90	95

Even 12 inch poured concrete walls with a 55 decibel sound reduction fail to provide adequate attenuation when levels of 150 to 160 decibels must be reduced to 90 decibels. Double wall construction must be used when a reduction of 60 decibels is required or when a reduction of 55 decibels is desired with a wall other than 12 inch masonry.

WHAT IS "SOUND TRANSMISSION LOSS?"

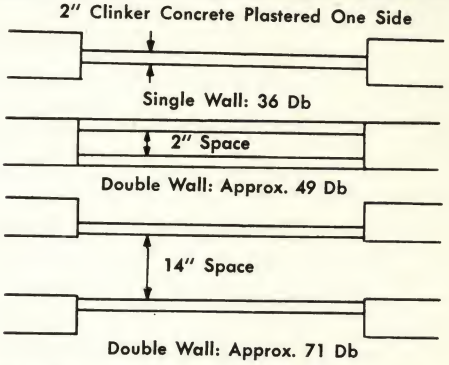
It is necessary for the architect to know that sound transmission loss is the term assigned to the property of a wall or other element to prevent sound from going through. It should be understood that this barrier action against sound is not related to the property of ceiling acoustical tile or similar material to absorb sound by reducing reflection.

Acousticians have an exact relation defining the transmission loss in terms of acoustic power incident on a wall and that transmitted through. The noise reduction provided by a wall is a little simpler. It is the difference in sound pressure levels on either side of a wall. It is not, therefore, the same as transmission loss, but for many cases of interior doors, the two are not far different.

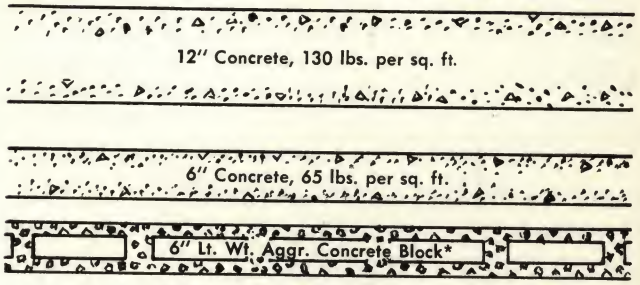
The transmission loss of a wall or element is determined by placing it in an opening between two standard test rooms. Sound is provided on one side, and measured on both. The difference in sound level, with certain corrections, is the transmission loss.

DOUBLE WALL CONSTRUCTION

The two diagrams below show that double (cavity) walls in a test facility have greatly improved noise reduction.



Upper sketch shows 2" concrete wall, plastered one side, has loss of 36 db. The next sketch shows a double wall same construction with loss of 49 db. For separated walls in lower sketch, loss is 71 db.



*Hollow 24 p.s.f. Painted one side.

Upper wall has a loss of 55 db. Lower 6" cavity wall provides 78 db.

HIGH SOUND REDUCTION WITH DOORS

When double (cavity) walls require an opening with two doors, each in its own frame so that frames and doors are not mechanically tied together, the attenuation of the doors can be expected to approximate that of the walls, assuming good seals. This is referred to as a sound lock and we call it our double wall Sound Lok arrangement (page 6).

In many cases high attenuation is not necessary and two doors spaced apart from each other to form a sound lock but hung in the same frame would be satisfactory. The transmission loss in this single wall Sound Lok is somewhat less than with separate frames in double walls.

LABORATORY CERTIFICATION

Performance characteristics of building elements are determined by standard tests. The ability of a wall or door to reduce noise is known by its transmission loss. This is determined by recommended practice ASTM E 90-55 by the American Society for Testing Materials.

This specification is used by testing agencies such as the National Bureau of Standards, Washington, D. C. and Riverbank Acoustical Laboratories, Geneva, Illinois to test doors and similar elements. These agencies will test such elements sealed in place or normally hung. Most tests on doors have been made with the unit sealed rather than normally hung. This, of course, gives a higher test figure than normal installation because of the loss due to cracks. This difference may vary from 2 to 8 db depending on cracks and sealing.

A report of the test lab describing specimen and installation is supplied to the manufacturer. This certification should be required by the architect when specifying elements which require a definite transmission loss. Some manufacturers have certain tests made on elements as part of their developmental program, and such tests may not indicate actual performance. The certification therefore should be examined to be certain that the test indicates actual performance or some other acceptable condition.

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